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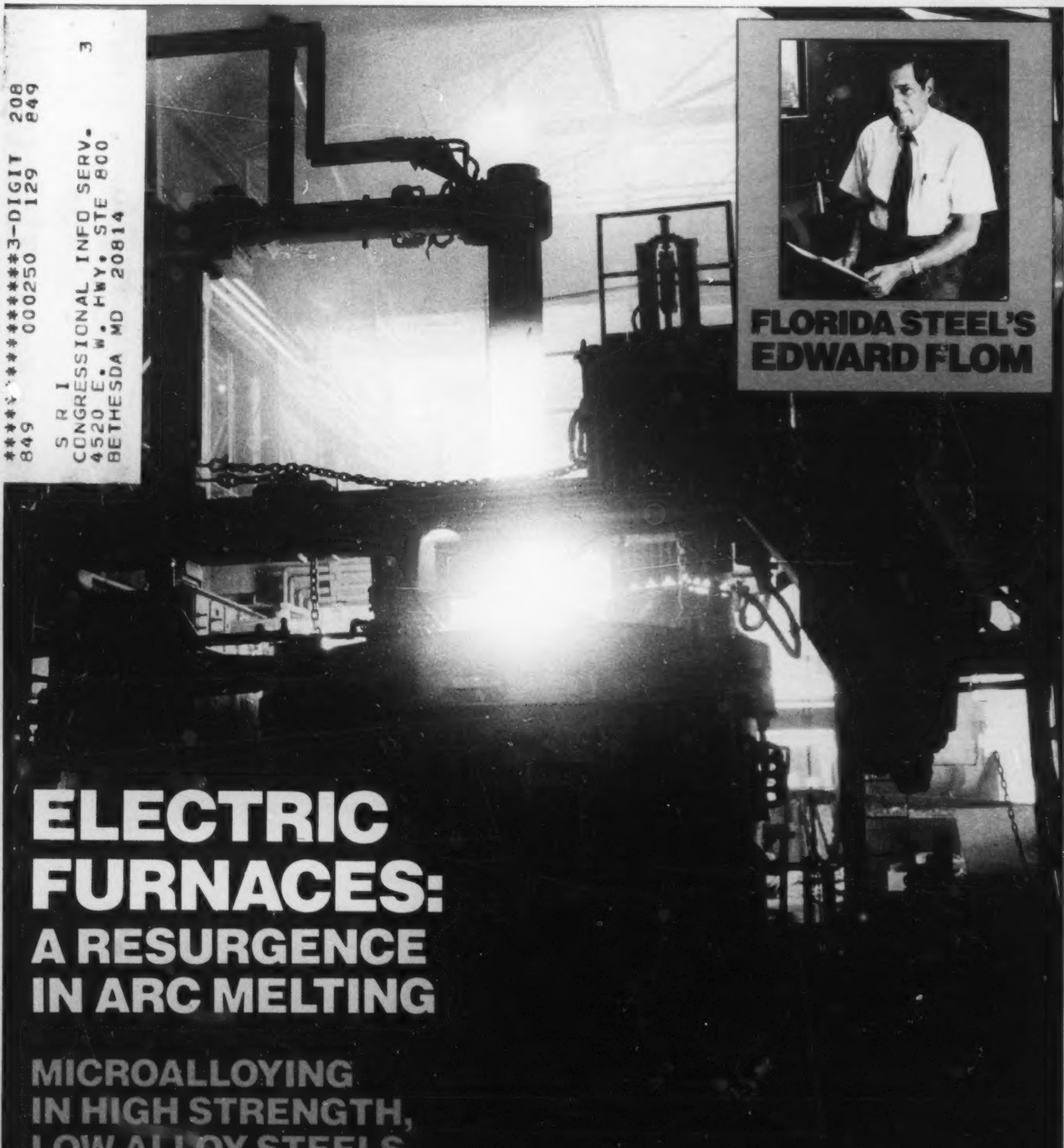

FLORIDA STEEL'S EDWARD FLOM

ELECTRIC FURNACES: A RESURGENCE IN ARC MELTING

MICROALLOYING IN HIGH STRENGTH, LOW ALLOY STEELS

IRON AGE
METALS PRODUCER

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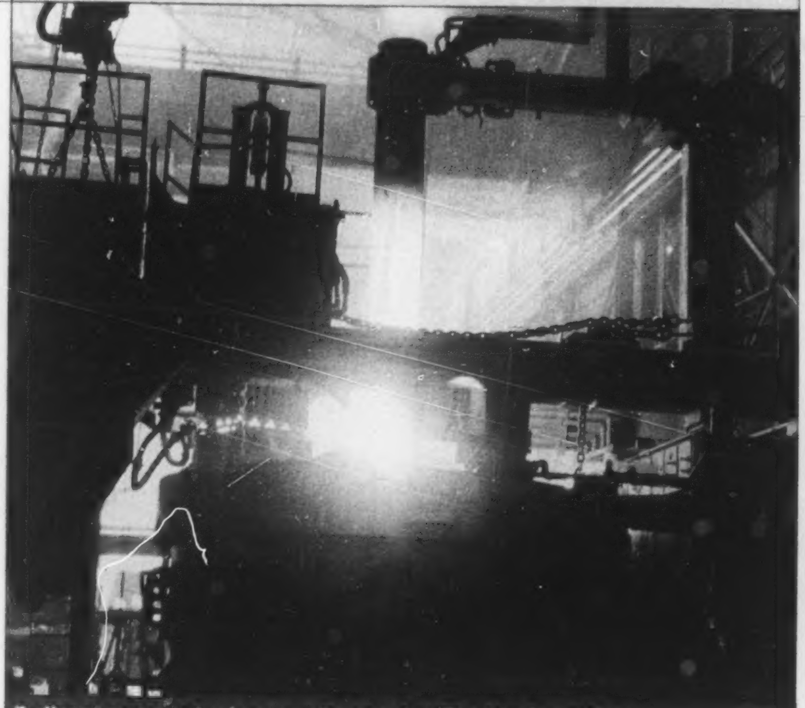

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First Operation Blanks: Steel's New Way of Doing Business

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INTEREST IN DRI STARTS TO HEAT UP AGAIN

A big purchase of Venezuelan briquettes by LTV Steel Co. is reviving hopes among suppliers that the U.S. market will open up, particularly since ferrous scrap prices are climbing.

Direct Reduced Iron Capacity Utilization, 1986
(Million Metric Tons)

	Tons	Pct
Actual production	12.68	53.7%
Capacity idled due to war	1.22	5.2%
Capacity idled due to market factors	2.66	11.3%
Unused capacity started up in 1986	1.68	7.1%
Operating capacity limited by market factors	1.07	4.5%
Operating capacity limited by technical problems	4.31	18.2%
Total	23.62	100.0%

Source: Midrex Corp.

LTV Steel Co. recently received a boatload of direct reduced iron briquettes, an unusual purchase in a steel industry that has been relying on scrap metal for its electric furnaces.

Over the past 40 years or so, direct reduction has periodically seemed on the brink of a big breakthrough in the United States. There has been steady progress abroad, but each U.S. flurry has fizzled out as a result of low scrap prices, high natural gas prices, and the depressed condition of the steel industry.

The direct reduced iron (DRI) briquettes shipped to LTV were produced by the FIOR plant in Venezuela. They were purchased to supplement scrap in the furnace charge in electric furnaces at LTV's Cleveland works.

This shipment could be the forerunner of big things for direct reduction in the U.S. It isn't likely that new reduction plants will be built here, but the product of offshore plants could find widespread use.

"We are convinced there will be a greater need, particularly among the electric furnace people," said Marcus O. Davies, president of Midrex Corp. Quality considerations are forcing increased use of virgin iron, Mr. Davies indicated.

Midrex and its parent, Kobe Steel, Ltd., are betting heavily on a growing market for DRI. They are leasing the High Iron Briquette plant built by USX Corp. years ago at Puerto Ordaz in Venezuela. This will be converted into an 800,000-ton Midrex plant and operated on a merchant basis during the 11-year lease.

"We expect the plant to fill a need," said Mr. Davies. The need and the demand already exist, he said; what's missing is a supply. "There isn't a heck of a lot of it available."

According to Midrex, the 12.7 million tons of DRI produced in 1986 compared with nearly 24 million tons of capacity. However, most of the capacity is represented by captive plants, committed to steel operations. In addition, much of the capacity is in remote areas, too far from the U.S. for economical shipment.

This is the case for one of the only two merchant plants—the big Midrex unit of Sabah Gas Industries in Malaysia. Rated for no more than a million tons of DRI per year, the Malaysian plant produced around 600,000 tons in 1986. Half the output went to Asian countries and the rest to Europe.

The other merchant source has been the FIOR plant in Puerto Ordaz. This plant uses the fluid bed reduction process developed by Esso Research. The fine particles produced are compacted into stable briquettes.

In 1988, much of the output of the FIOR plant will be taken over by Sivensa (Siderurgica Venezolana S.A.), a private electric furnace company in Venezuela. FIOR's contracts with Bethlehem Steel Corp. will be honored.

In addition, Sivensa will eventually be shipping some DRI from a completely new 400,000-ton plant it is ordering from Midrex and Voest Alpine AG of Austria.

In the U.S., the one source of DRI has been Georgetown Steel Corp. Georgetown does offer reduced pellets for sale. "We'll sell to anybody, anytime," said John Rodgers, manager of the company's Midrex operation. He said a price of $130 per ton f.o.b. Georgetown had held sales down.

The price of the FIOR direct reduced iron was not available, but it was said to be as low as $100 per ton. The prices have been running higher since August.

By George J. McManus

MATERIALS PRICES

Steel composite price to be revised

The Finished Steel Base Price in the composite prices section of the Materials Prices table on this page will be revised due to a lack of necessary information. The revision will require a revamping of the basic pricing formula.

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 58.0*
Pellets (per iron unit natural)	gross-ton 59.4**
Pellets (per iron unit natural)	gross-ton 72.45-86.9***
Mesabi, regular-unscreened	gross-ton 32.53
Mesabi, non-bessemer	gross-ton 30.03-31.53

*58.0¢—Mineral Services, Inc. as of 8/13/85. **59.4¢—Inland Steel Mining [illegible] 85 and Pickands Mather 8/1/85, delivered hold of vessel, upper lake ports. ***72.45¢—Cleveland Cliffs as of 12/30/86; 72.5¢—U.S. Steel as of 8/16/85; 86.9¢—Oglebay Norton 3/25/82; Hanna Mining 2/26/82.

STEEL PRODUCTION, COMPOSITE PRICES

(Effective October 5, 1987) **U.S. Steel Production**	Last Week	Two Weeks Ago	To Date 1986	To Date 1985
Net tons, in thousands	1,827	1,787	65,278	62,750
Capability Utilization Rate	84.6	83.5	77.1	64.6

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 10/4/87)	26.002	24.804	24.804	24.951
Pig Iron** (Net ton= 2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 107.83	$ 97.17	$ 92.83	$ 73.17
No. 2 bundles	$ 71.83	$ 65.50	$ 58.83	$ 50.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 115.50	$ 105.50	$ 96.50	$ 76.50
No. 1 steel, Philadelphia	91.50	88.50	84.50	71.50
No. 1 steel, Chicago	116.50	97.50	97.50	71.50
No. 1 bundles, Detroit	133.50	118.50	105.50	72.50
Low Phos., Youngstown	118.50	100.50	100.50	72.50
No. 1 mach'y cast., Pgh	92.50	92.50	92.50	74.50
No. 1 mach'y cast., Phila	101.50	93.50	93.50	93.50
No. 1 mach'y cast., Chi	118.50	108.50	108.50	101.50

*Finished Steel Composite: Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.
**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.
***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective October 5, 1987) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	83.00	80.00	10/5/87
Copper (C)	87.00	88.00	9/18/87
Lead	42.00	38.00	7/6/87
Magnesium Ingot	153.00	148.00	12/9/85
Nickel (LME)	246.00	245.00	10/5/87
Zinc	43.00	45.50	9/9/87

ALUMINUM: Avg. for last week & previous week. COPPER (C)=cathode. LEAD: common grade. MAGNESIUM: 99.8% pig delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$248.00
Beryllium-copper, per lb. cont. Be	$152.00
Beryllium 97% powder 200	$196.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz	$456.50
Indium, per troy oz	$9.95
Iridium, per troy oz	$350.00
Magnesium sticks, 10,000 lbs	$2.12
Mercury, per 76-lb., f.o.b. N.Y.	$348.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz	$133.00
Platinum, per troy oz	$557.00
Rhodium, per troy oz	$1,280.00
Silver ingots, per troy oz	$7.60
Titanium sponge, melt grade	$3.40-3.55
Tungsten po[illegible], hyd red	$9.53-9.85
Vanadium	$6.00
Zirconium sponge	$11.20-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

Sept. 28—302.00
Sept. 29—301.00
Sept. 30—298.00
Oct. 1—299.00
Oct. 2—300.00

Scrap Prices
Brass Mill Scrap

(Cents per lb., over 20,000 lbs. add 1¢ per lb.)

	Solids	Turnings
Copper	66	61
Yellow brass	59½	58½
Red brass	60½	56½
Comm. bronze	62	57
Mang. bronze	46	45
Free cutting rod ends	56½	55½

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	64
No. 2 copper wire	55
Light copper	49

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	59
No. 2 copper wire	51
Light copper	44
No. 1 composition	49
No. 1 comp. turnings	49
Hvy. yellow brass solids	35
Hvy. yellow brass turnings	29
Radiators	32

Aluminum

New mixed clips	50 — 51
Old sheet	44 — 45
Old cast	44 — 45
Clean dry borings	44 — 45

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	44 — 45
Mixed L.C. clips	43 — 44
Old sheets and cast	37 — 38
Borings and turnings	32 — 33
Duraluminum clippings	37 — 38

Copper and Brass

No. 1 copper wire	53 — 57
No. 2 copper wire	45 — 46
Light copper	42 — 43
Radiators	30 — 31
No. 1 composition	43 — 44
No. 1 composition turnings	41 — 42
Cocks and faucets	37 — 38
Clean heavy yellow brass	34 — 35
Brass pipe	39 — 41
New soft brass clippings	50 — 51

Lead

Heavy soft lead	16 — 17
Whole batteries	2 — 3
Type metal	25 — 26
Electrotype	18 — 19

Nickel

Nickel solids	135 —145
Nickel rod ends	143 —153
Nickel sheets, clips	143 —153
Nickel turnings	31 — 41

Zinc

New zinc clippings	16 — 17
Old diecast zinc	12 — 13

EFFECTIVE OCTOBER 5, 1987

(Effective October 5, 1987) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of Iron Age editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$115.00 to	$116.00
No. 2 hvy. melting	97.00 to	98.00
No. 1 dealer bundles	159.00 to	160.00
No. 1 factory bundles (auto)	159.00 to	160.00
No. 2 bundles	64.00 to	65.00
No. 1 busheling	159.00 to	160.00
Machine shop turnings	13.00 to	14.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	45.00 to	46.00
Low phos. punchings plate	154.00 to	155.00
Heavy turnings	97.00 to	98.00
No. 1 RR hvy. melting	121.00 to	122.00
Rails, 2 ft and under	153.00 to	154.00
Scrap rails, random lgth	124.00 to	125.00
RR specialties	152.00 to	153.00
No. 1 machinery cast	92.00 to	93.00
Cupola cast	84.00 to	85.00
Heavy breakable cast	30.00 to	31.00
Stainless		
18-8 bundles and solids	625.00 to	635.00
18-8 turnings	525.00 to	535.00

Chicago

No. 1 hvy. melting	$116.00 to	$117.00
No. 2 hvy. melting	112.00 to	113.00
No. 1 dealer bundles	157.00 to	158.00
No. 1 factory bundles (auto)	153.00 to	154.00
No. 2 dealer bundles	88.00 to	89.00
No. 1 busheling	147.00 to	148.00
Shredder scrap	136.00 to	137.00
Machine shop turnings	39.00 to	40.00
Mixed borings and turnings	32.00 to	33.00
Shoveling turnings	49.00 to	50.00
Cast iron borings	54.00 to	55.00
Low phos. forge crop	149.00 to	150.00
Low phos. punchings plate 1/4 in. and heavier	165.00 to	166.00
Low phos. 2 ft and under	160.00 to	161.00
No. 1 RR hvy. melting	134.00 to	135.00
Scrap rails random lgth	125.00 to	126.00
Reroller rails	139.00 to	140.00
Rails, 2 ft and under	159.00 to	160.00
RR couplers and knuckles	134.00 to	135.00
RR car axles	159.00 to	160.00
No. 1 machinery cast	118.00 to	119.00
Cupola cast	107.00 to	108.00
Stove plate	117.00 to	118.00
Steel car wheels	154.00 to	155.00
Stainless		
18-8 bundles and solids	600.00 to	610.00
18-8 turnings	460.00 to	470.00
430 bundles and solids	150.00 to	160.00
430 turnings	85.00 to	95.00

Philadelphia

No. 1 hvy. melting	$90.00 to	$93.00
No. 2 hvy. melting	80.00 to	83.00
No. 1 dealer bundles	135.00 to	138.00
No. 2 dealer bundles	61.00 to	64.00
No. 1 busheling	130.00 to	133.00
Shredder scrap	125.00 to	128.00
Machine shop turnings	26.00 to	29.00
Mixed borings and turnings	26.00 to	29.00
Shoveling turnings	44.00 to	47.00
Low phos. 5 ft and under	120.00 to	123.00
Low phos. 2 ft punchings	135.00 to	138.00
Electric furnace bundles	138.00 to	141.00
RR specialties	120.00 to	123.00
Rails, 2 ft and under	134.00 to	137.00
Cupola cast	92.00 to	95.00
Heavy breakable cast	52.00 to	55.00
No. 1 machinery cast	100.00 to	103.00

Detroit

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$89.00 to	$90.00
No. 2 hvy. melting	87.00 to	88.00
No. 1 dealer bundles	133.00 to	134.00
No. 2 bundles	67.00 to	68.00
No. 1 busheling	131.00 to	132.00
Drop forge flashings	91.00 to	92.00
Machine shop turnings	42.00 to	43.00
Mixed borings and turnings	15.00 to	16.00
Shoveling turnings	42.00 to	43.00
Cast iron borings	38.00 to	39.00
Heavy breakable cast	40.00 to	41.00
Mixed cupola cast	57.00 to	58.00
Automobile cast	79.00 to	80.00
Stainless		
18-8 bundles and solids	600.00 to	610.00
18-8 turnings	290.00 to	300.00
430 bundles and solids	150.00 to	160.00

Youngstown

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$101.00 to	$102.00
No. 2 hvy. melting	92.00 to	93.00
No. 1 dealer bundles	141.00 to	142.00
No. 2 dealer bundles	60.00 to	61.00
Machine shop turnings	26.00 to	27.00
Shoveling turnings	26.00 to	27.00
Low phos. plate	118.00 to	119.00
Electric furnace bundles	121.00 to	122.00
Galvanized bundles	118.00 to	119.00

Cleveland

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$96.00 to	$97.00
No. 2 hvy. melting	85.00 to	86.00
No. 1 dealer bundles	141.00 to	142.00
No. 1 factory bundles	136.00 to	137.00
No. 2 bundles	56.00 to	57.00
No. 1 busheling	135.00 to	136.00
Machine shop turnings	31.00 to	32.00
Shoveling turnings	31.00 to	32.00
Cast iron borings	31.00 to	32.00
Cut structural & plates 5 ft and under	114.00 to	115.00
Cut structural & plates 2 ft and under	137.00 to	138.00
Low phos. punchings plate	140.00 to	141.00
Foundry steel 2 ft & under	87.00 to	88.00
No. 1 RR hvy. melting	102.00 to	103.00
Rails, 2 ft and under	134.00 to	135.00
Rails, 18 in. and under	136.00 to	137.00
No. 1 machinery cast	88.00 to	89.00
Mixed cast	55.00 to	56.00
Stainless		
18-8 bundles	605.00 to	615.00
18-8 turnings	295.00 to	305.00
430 bundles	155.00 to	165.00

Buffalo

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$84.00 to	$85.00
No. 2 hvy. melting	74.00 to	75.00
No. 1 busheling	129.00 to	130.00
No. 1 dealer bundles	129.00 to	130.00
No. 2 bundles	41.00 to	42.00
Machine shop turnings	18.00 to	19.00
Mixed borings and turnings	18.00 to	19.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	29.00 to	30.00
Low phos. plate	115.00 to	116.00
Structural and plate 2 ft and under	119.00 to	120.00
Rails, 2 ft and under	129.00 to	130.00
Scrap rails, random lgth	104.00 to	105.00
No. 1 machinery cast	89.00 to	90.00
No. 1 cupola cast	77.00 to	78.00

St. Louis

No. 1 hvy. melting	$109.00 to	$110.00
No. 2 hvy. melting	99.00 to	100.00
No. 1 busheling	135.00 to	136.00
No. 1 dealer bundles	139.00 to	140.00
No. 2 bundles	94.00 to	95.00
Machine shop turnings	24.00 to	25.00
Shoveling turnings	28.00 to	29.00
Cast iron borings	34.00 to	35.00
No. 1 RR hvy. melting	119.00 to	120.00
Rails, random length	118.00 to	119.00
Rails, 5 ft and under	129.00 to	130.00
RR specialties	119.00 to	120.00
Cupola cast	79.00 to	80.00
Heavy breakable cast	43.00 to	44.00
Stove plate	107.00 to	108.00
Steel car wheels	139.00 to	140.00
Rerolling rails	130.00 to	131.00
Unstripped motor blocks	60.00 to	61.00

Birmingham

No. 1 hvy. melting	$104.00 to	$105.00
No. 2 hvy. melting	97.00 to	98.00
No. 1 dealer bundles	119.00 to	120.00
No. 2 bundles	79.00 to	80.00
No. 1 busheling	119.00 to	120.00
Shredder scrap	120.00 to	121.00
Machine shop turnings	49.00 to	50.00
Shoveling turnings	59.00 to	60.00
Cast iron borings	40.00 to	41.00
Electric furnace bundles	92.00 to	93.00
Elec. furnace, 3 ft & under	94.00 to	95.00
Structural and plate, 2 ft	124.00 to	125.00
Structural and plate, 4 ft	119.00 to	120.00
No. 1 RR hvy. melting	119.00 to	120.00
Scrap rails, random lgth	104.00 to	105.00
Rails, 2 ft and under	124.00 to	125.00
Angles and splice bars	112.00 to	113.00
No. 1 cupola cast	92.00 to	93.00
Unstripped motor blocks	89.00 to	90.00

Cincinnati

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$96.00 to	$97.00
No. 2 hvy. melting	86.00 to	87.00
No. 1 dealer bundles	138.00 to	139.00
No. 2 bundles	59.00 to	60.00
Machine shop turnings	27.00 to	28.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	39.00 to	40.00
Low phos. 18 in. and under	139.00 to	140.00
Rails, random length	116.00 to	117.00
Rails, 2 ft and under	144.00 to	145.00
No. 1 cupola cast	83.00 to	84.00
Heavy breakable cast	44.00 to	45.00
Drop broken cast	93.00 to	94.00

New York

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$58.00 to	$60.00
No. 2 hvy. melting	51.00 to	52.00
No. 2 dealer bundles	35.00 to	37.00
Mixed borings and turnings	10.00 to	11.00
Machine shop turnings	4.00 to	6.00
Shoveling turnings	10.00 to	12.00
Clean cast. chem. borings	35.00 to	36.00
No. 1 machinery cast	79.00 to	80.00
Mixed yard cast	50.00 to	51.00
Heavy breakable cast	15.00 to	17.00
Stainless		
18-8 prepared solids	500.00 to	520.00
18-8 turnings	365.00 to	385.00
430 prepared solids	100.00 to	110.00
430 solids	95.00 to	105.00

Boston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$60.00 to	$62.00
No. 2 hvy. melting	50.00 to	52.00
No. 1 dealer bundles	88.00 to	90.00
No. 2 bundles	30.00 to	32.00
No. 1 busheling	86.00 to	88.00
Shredder scrap	78.00 to	80.00
Machine shop turnings	12.00 to	14.00
Shoveling turnings	18.00 to	20.00
No. 1 machinery cast	75.00 to	80.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	8.00 to	10.00

San Francisco

No. 1 hvy. melting	$60.00 to	$62.00
No. 2 hvy. melting	54.00 to	56.00
No. 1 dealer bundles	51.00 to	53.00
No. 2 dealer bundles	40.00 to	41.00
Machine shop turnings	13.00 to	14.00
Cast iron borings	13.00 to	14.00
No. 1 cupola cast	79.00 to	81.00

Los Angeles

No. 1 hvy. melting	$61.00 to	$63.00
No. 2 hvy. melting	55.00 to	57.00
No. 1 dealer bundles	53.00 to	55.00
No. 2 dealer bundles	39.00 to	40.00
Machine shop turnings	12.00 to	13.00
Shoveling turnings	13.00 to	14.00
Cast iron borings	13.00 to	14.00
Elec. furnace 1 ft and under (foundry)	70.00 to	72.00
No. 1 cupola cast	74.00 to	76.00

Seattle

No. 1 hvy. melting	$78.00 to	$79.00
No. 2 hvy. melting	68.00 to	69.00
No. 2 bundles	49.00 to	50.00
No. 1 cupola cast	89.00 to	90.00
Mixed yard cast	80.00 to	82.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$93.00
No. 2 hvy. melting, cut 2 ft and under	80.00
No. 1 dealer bundles	116.00
No. 2 bundles	64.00
Mixed steel scrap	65.00
Bush. new fact. prep'd	111.00
Bush. new fact. unprep'd	94.00
Machine shop turnings	31.00
Short steel turnings	33.00
Mixed borings and turning	20.00
Cast scrap	100.00

Houston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$94.00 to	$95.00
No. 2 hvy. melting	84.00 to	85.00
No. 2 bundles	52.00 to	53.00
Machine shop turnings	37.00 to	38.00
Crushed turnings	47.00 to	48.00
Shredder scrap	110.00 to	111.00
Cut structural plate, 2 ft and under	109.00 to	110.00
Cut structural plate, 5 ft and under	96.00 to	97.00
Unstripped motor blocks	63.00 to	64.00
Cupola cast	97.00 to	98.00

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IRON AGE

THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

A Fairchild Business Publication

December 1987

STEEL SHORTAGE

WHAT HAPPENED TO THE WORLD'S SURPLUS?

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IRON AGE
THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

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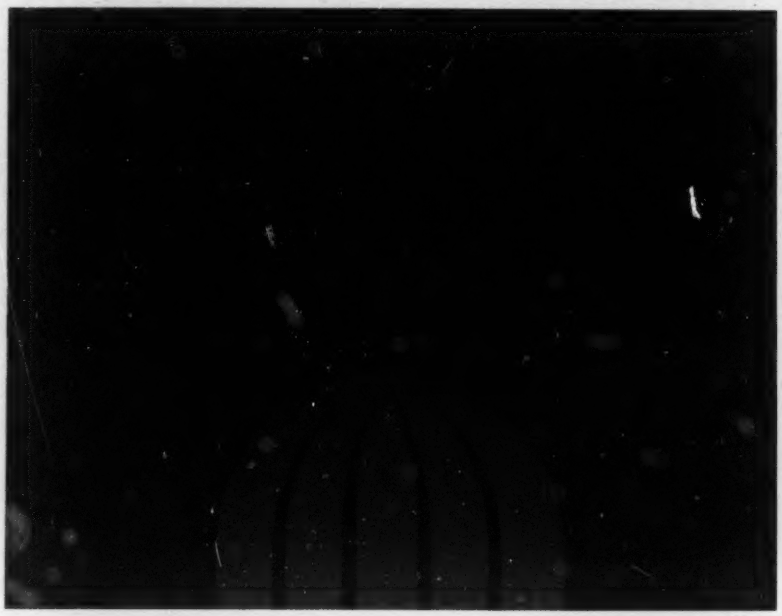

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LETTERS

Tuscaloosa Steel

Thank you for the excellent article that George McManus wrote on Tuscaloosa Steel Corp. ("In the right place at the right time," *Iron Age*, June 1987, p. 23.)

Your article correctly identifies O'Neal Steel as an equity participant in the mill and a large user of the product. However, it failed to make clear that O'Neal is also the primary marketing agent for Tuscaloosa Steel and, in that capacity, is responsible for the sale of the majority of our product, both coil and plate.

John E. Thomas
Chief Executive Officer
Tuscaloosa Steel Corp.

Matching Wits

Hey this smacks of fun. Matching my whits with the wits of the top bananas and claim at the top ("1995: Match your wits with those at the top," *Iron Age*, October 1987, p.5.)

Some of these questions really needed some heavy thinking, especially No. 2. No wonder these head honchos needed another head for help. With the bull at the stock market taking its worse stumbling, I think a baker's dozen would be apropos. Like: Do the ledgers show any of the head honchos about ready to leap from the ledges? "Heck NO, hold on—let the other guy go."

Being a closet optimist, I figure with all the good things, especially our freedom to work, weighed against all the bad things, especially the uneducated masses; we still have a preponderance of wealth of human resource to carry us over the rough roads to a smoother and better tomorrow—1995.

William T. Bystry
Fallston, Md.

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STEEL SHORTAGE

WHAT HAPPENED TO THE WORLD'S SURPLUS?

WESTERN WORLD STEEL PRODUCTION

	1974	1980	1985	1990 E
W. Europe	203	223	195	170/180
N. America	156	152	139	110/115
Japan	126	142	125	110/115
Dev. countries	33	60	86	110
Others	15	18	16	17
Total	553	595	561	517/537

On paper, the world has plenty of steel.

According to the International Iron & Steel Institute (IISI), the Western World will use a little less than 440 million tons of steel in 1987 and no more than that for the rest of the decade.

IISI looked for steel capacity to stay well over the usage rate.

"Total capacity in 1990 of between 517 million and 537 million metric tons is ample to supply Western World needs of around 440 million tons," said Lenhard Holschuh, secretary general of IISI.

Others concurred. "We've all seen some signs of improvement in the world steel picture, but there is still a crisis with a 200-million-ton surplus," said Thomas C. Graham, president of the USS division, USX Corp., and also chairman of the American Iron & Steel Institute.

While these estimates were being aired at the recent Washington meeting of IISI, a rapid change was taking place in the real world of steel. In the U.S., the long term steel surplus suddenly had given way to a deficit. Steel mills were struggling to keep up with demand.

"If anyone tells you they're not solidly booked for the rest of the year, they're lying," said the president of a large American mill.

The world steel market was also undergoing a significant change. There might still be a surplus, but for a variety of reasons, U.S. buyers no longer had access to unlimited quantities of foreign steel.

The new market balance was partly due to unexpectedly brisk demand. Mr. Holschuh noted that estimates made a year ago called for 1987 world steel consumption of 721 million tons. He said the most recent returns indicated 739 million tons would be used this year.

Even as Mr. Holschuh spoke in October, a rising market was making his projection obsolete. His latest forecast assumed that demand for steel in the U.S. would be down 3 pct this year. That was in line with domestic estimates made only a month or two ago.

With no slowing of orders, however, domestic officials were busy revising their estimates upward. Again. By the fourth quarter, it was clear steel shipments in the U.S. would be up 3 million to 4 million tons from the 70 million tons of 1986.

Japan's steel production has risen to an annual rate well over 100 million tons. The Japanese are reportedly getting some hefty sheet orders from Russia. The British steel industry is operating at a high level "and operating profitably."

'It's important that steelmaking be an economic enterprise and not a social or political one.'

David M. Roderick, chairman
USX Corp. and IISI

The early estimates of 1987 demand were too pessimistic, but what has really become suspect are estimates of steel capacity.

The U.S. supposedly has nearly 112 million tons of raw steel capacity. In 1984, when steel shipments were close to the expected 1987 tonnage, only 92 million tons of raw steel were required.

There should be a comfortable supply cushion, but as has been noted, U.S. mills have been unable to satisfy 1987 demand. Mill officials insist the supply problems are due to a number of temporary factors. The long USS strike emptied pipelines. Service centers allowed their inventories to run down. There have been unusual production snags.

Once normal conditions have been restored, said officials, the market will sag back to its old rut. That may be, but six months ago people were predicting an early end to the steel pinch. It hasn't happened yet. Well into the fourth quarter, there was no sign of a slowdown, and it hasn't been shown that the domestic industry has any spare capacity.

There hasn't been a practical test of how much capacity was left by what Mr. Graham called the Draconian cutbacks of the last six years. Official ratings can't measure the effect of wholesale slashes in people, facilities, and materials.

With regard to materials, a critical limitation may be scrap supply. In the most recent year reported, electric furnaces produced nearly 160 million tons or 25 pct of the world's steel supply. Nearly all of this came from scrap.

In the summer of 1987, the U.S. scrap supply suddenly tightened. An auction market developed, and mills were bidding as high as $160 a ton for industrial scrap. There were reports that one large domestic mill was trying to bring scrap in from Great Britain.

Coke could become another critical material. The deterioration of coke ovens has left a number of mills entirely dependent on outside supply. Weirton Steel Corp., McLouth Steel, and Sharon Steel Corp. were among those operating without coke batteries.

Endangered Species

In the U.S., blast furnaces were moving toward the endangered species class. There are estimates that only about a third of the rolling mills in the country are capable of delivering prime quality.

Finally, there has been the subtraction of people. Steelmaking isn't a push-button operation yet, and the 270,000 steel people turned loose since 1979 took with them a vast amount of experience and competence.

According to IISI, Western World raw steel capacity fell from 595 million tons in 1980 to 561 million tons (metric) in 1985. Another 30 million to 40 million tons will be subtracted by 1990, said IISI. (See chart, p. 14.)

In both periods, the net changes understate the violent contraction in much of the industrial world. Capacity increases of developing nations have partly offset the large cuts of developed countries.

As an example, the 50 million ton reduction in American steel potential since 1977 exceeded the net reduction of the whole world over the last seven years.

No one should be under the illusion that the retired capacity can be quickly activated and restored if needed. The physical magnitude and the finality of the steel shrinkage were brought out at IISI by J. Bruce Johnston, executive vice president of USX Corp.

In recent years, said Mr. Johnston, USX had complete plant shutdowns at Geneva Works, Texas Works, Homestead Works, Duquesne Works, Youngstown Works and 15 others.

At the plants that remain, numerous facilities have been retired. Sixteen coke batteries, 15 blast furnaces and a number of sinter lines were among the casualties. This deletion of ironmaking facilities was representative of the domestic trend and helped explain why the scrap supply was over subscribed.

'Total (steelmaking) capacity in 1990 (will be) ample to supply Western needs.'

Lenhard Holschuh, secretary general IISI

The furnaces are gone, and so are the people who ran them. "As the decade began," said Mr. Johnston, "U.S. Steel had an active steel work force of 100,068 people. On June 1, 1987, our total active steel work force, including management, was 19,657.

"We reduced our steel management work force from 9,600 in 1980 to 2,900 on June 30, 1987," said Mr. Johnston. "For all remaining executives, managers, and administrators, we made extensive salary and benefit reductions."

Hourly benefits were reduced in two successive labor agreements. "USS hourly contract labor costs and USS unit labor costs will be meaningfully lower on Feb. 1, 1991 than they were at the outset--March 1, 1983," said Mr. Johnston.

Contributing to the unit cost reduction was a dramatic productivity improvement. U.S. Steel's labor content fell from 10.8 manhours a ton in 1982 to 3.0 manhours a ton in 1987.

One effect of all the measures was to reduce the capacity of USS from nearly 38 million tons in 1977 to 18 million tons in 1987. The downsizing left the company with far more retired than active workers.

"In this decade," said Mr. Johnston, "our USX pension rolls have grown by a net 43,000 new retirees to a current total of 124,000 pensioners. We have paid out in pensions during this period over $7.36 billion."

USX has repeatedly contrasted its own ample funding of pension plans to the deficits of other large mills. It's no secret that any government payments to make up the deficits are strenuously opposed by David M. Roderick, chairman of USX Corp. and also IISI chairman.

"It's important that steelmaking be essentially an economic enterprise and not a social or political one," said Mr. Roderick. "We must not subsidize losers, for in doing so, it distorts the free market system."

It appeared that the Pension Benefit Guaranty Corp. was leaning toward this view. The agency has declined to take over the pension obligations of one bankrupt corporation—Eastmet—and has returned the pension plans of LTV Corp. to that company.

If the government stays with a tough policy on assistance to the steel industry, bankrupt companies could be forced to liquidate capacity. On the other hand, if the government refuses to give the help some mills are seeking on exit costs, the effect could be to preserve capacity that should be retired.

A Weaker Dollar

In the first six months of 1987, steel imports from both Europe and Japan were down 15 pct.

The declines weren't due to voluntary restraint agreements. Japan's steel quota is 5.8 pct of the market, and Japanese shipments were only 4.6 pct of the market in the first half. European shipments were 5 pct of the market compared to a quota of 6.2 pct.

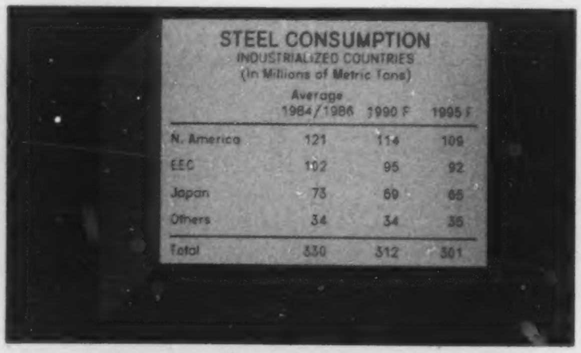
These numbers strongly suggest that the weakening of the dollar has made the U.S. market less attractive and less accessible to foreign producers.

That is true, said Martin Feldstein, Harvard economics professor. The steel import slide is part of a general currency-based trade pattern, Mr. Feldstein indicated at the recent IISI meeting.

"For the last three quarters," he noted, "the trade deficit in constant dollars has actually declined. It has now fallen 20 pct from its peak three quarters ago. I'm convinced the decline is going to continue in the months and years ahead.

"The basic reason is that the dollar began to fall in February of 1985. It has now come back almost to the level where it was when the rise began in 1980.

"I emphasize the dollar as the critical reason for the correction in our trade imbalance because I believe it was the dollar that caused



STEEL CONSUMPTION
INDUSTRIALIZED COUNTRIES
(In Millions of Metric Tons)

	Average 1984/1986	1990 F	1995 F
N. America	121	114	109
EEC	102	95	92
Japan	73	69	65
Others	34	34	35
Total	330	312	301

the U.S. trade problem and it is the change in the dollar that ultimately is going to solve our trade deficit."

Mr. Feldstein rejected the contention that the deficit was caused by the unwillingness of people at home and abroad to buy American products. "Even before the significant fall of the dollar, the U.S. exported manufactured products valued at $150 billion," he said. "Seventy percent of the manufactured products purchased by Americans were made in the U.S.

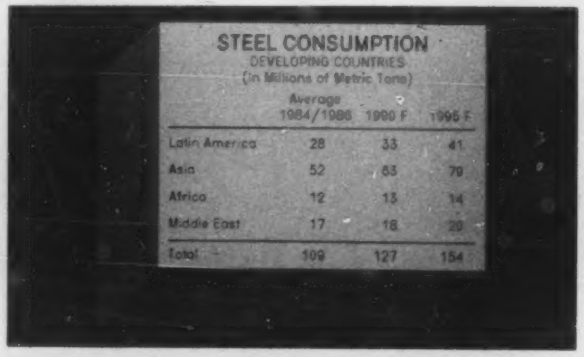
"As the dollar comes down further, those market shares both at home and abroad for U.S. manufactured products will continue to increase until our trade deficit is eliminated. I am talking about what I think the markets are going to do whether we like it or governments like it.

"I think there is no excuse for intervention by the American government or even more so for a distortion of monetary policy in an attempt to change the direction of the dollar.

"Why do I think the dollar is going to come down? Fundamentally, because the current accounts deficit that would be associated with persistence of the dollar at its present level is simply not financable.

"It's not a question of some historic standard... nor is it a question of purchasing power parity. The real issue is whether the current accounts deficit that results from the current level of the dollar can be financed by a flow of capital from the rest of the world.

"I believe it's already clear that it cannot be. We're already seeing that private investors are financing less than half the current accounts deficit. Since January, $70 billion of dollar obligations have been purchased by the central banks of the world, primarily the Bank of Japan.



STEEL CONSUMPTION
DEVELOPING COUNTRIES
(in Millions of Metric Tons)

	Average 1984/1986	1990 F	1995 F
Latin America	28	33	41
Asia	52	63	79
Africa	12	13	14
Middle East	17	18	20
Total	109	127	154

"(The dollar) is being supported by only the willingness of central banks to purchase. I do not believe that's a sustainable situation. The pressure of net selling by private investors will be too great for the central banks to resist.

"How far is the dollar going to have to fall...? To shift from today's deficit to a trade balance would require a further 15 pct decline of the dollar.

"Because of the higher rate of inflation in the U.S. than Japan and Germany, the dollar must fall further.... Roughly speaking, there's about a 3 pct difference between the inflation rates. Looking out over the next five years, we can see a real adjustment of 15 pct plus 3 pct a year or another 15 pct.

"As I look out five years, I see a correction bringing the dollar down (from 140 yen) to about 100 yen."

Mr. Feldstein discussed other proposals for balancing trade. Faster growth abroad would being favorable effects "of a very small magnitude," he said.

A domestic recession is "undesirable in its own terms" and wouldn't help much. "After all we only import 15 pct of our total spending."

Mr. Feldstein was also pessimistic about the cure-all advanced by business people and many others. "A reduction in the budget deficit per se would have only a trivial effect on the size of the U.S. trade imbalance."

If the official figures are right, the world steel surplus is even greater than it appears.

World capacity and production statistics are given in raw steel terms. With more than 70 pct of the Free World's steel continuously cast, the higher yields mean that raw steel tons understate the amount of finished steel available. This question is being addressed by IISI.

Continuous Casting

Apart from statistics, continuous casting is important as a key element in the transition of steelmaking from a batch to a continuous flow system. At all the big carbon steel mills, successive heats flow through the casters in nonstop sequences.

At a number of mills, the cast slabs and billets are being fed directly and continuously into rolling mills. "This process was commercialized at the Sakai works of Nippon Steel in 1981 and at the Fukuyama Works of Nippon Kokan in 1984," said Tomokatsu Kohtani managing director and general superintendent, Yawata Works, Nippon Steel Corp.

"The world's first attempt at the direct connection of a continuous caster to a remote hot strip mill was started at the Yawata Works of Nippon Steel in June of 1987 and is now successfully working," said Mr. Kohtani.

In Japan, Europe, and the U.S., pickling, tandem rolling, annealing and tempering are being tied together in continuous systems.

In their refining operations, the Japanese are moving to separate rather than unify different steps. "Conventional oxygen steelmaking combines desiliconization, dephosphorization, decarburization and other refining functions in one process step," said Mr. Kohtani.

'A reduction in the budget deficit would have only a trivial effect on the trade imbalance.'

Martin Feldstein, economics professor
Harvard University

"The new process separates the different refining steps," he said. "A hot metal pretreatment unit and a secondary refining unit are arranged before and after the basic oxygen furnace respectively."

U.S. producers, who work with low phosphorous ores, haven't adopted extensive hot metal pretreatment, but they are applying ladle refining on a large scale. The new trend is toward vacuum treatment. This can produce low carbon steel and facilitate the use of continuous annealing.

All the industrial countries are combining bottom blowing and bottom stirring with top blowing of oxygen vessels.

Scrap melting capabilities of oxygen furnaces are being increased in a number of ways. The KMS process of Klockner injects coal through bottom tuyeres and makes use of post combustion. The ALCI process of Arbed uses lances for coal injection.

Use of the electric furnace for carbon steels continues to grow. Ultra-high power, water cooling, continuous charging, eccentric bottom tapping are some of the advances being applied.

In the developing nations, electric steelmaking is frequently combined with direct reduction. These nations have limited scrap supplies, and many are in the Equatorial belt that is rich in oil and gas.

At the IISI meeting there were reports on direct reduction and electric furnaces by A.T. Acevedo, managing director of Argentina's Acindar SA, and by Tachia Jooji, general manager and CEO of Nigeria's Delta Steel Co., Ltd.

The trials and tribulations of steelmaking in a developing country were noted by Mr. Jooji. He referred to the low utilization rate of the direct reduction plant.

"This arises from the scarcity to total lack of such basic steelmaking items as refractories," he said. "Moreover, it has not been possible to ensure a steady supply of iron ore, electrodes and other consumables because of poor financing and stringent exchange control.

"Power outages have been one of the most agonizing handicaps."

The technology for stainless steel was discussed at IISI by Richard P. Simmons, chairman of Allegheny Ludlum Corp.

"For the balance of this century," said Mr. Simmons, "I believe that the technologies which are already in place, with certain exceptions, will be the foundation on which further technology improvements will be made."

"Most important of the new technologies is the strip casting process," said Mr. Simmons.

By George J. McManus

Korea: 'We Have a Lot of Industry Clamoring For Our Steel'

In 1988, the Republic of Korea will be the scene of the summer Olympics in September and the annual meeting of the International Iron & Steel Institute in early October.

These events focus attention on a dynamic economy and a dynamic steel industry. The vitality of both shows up in 1987 Korean steel output that will be more than 16 million metric tons. That will be nearly double the steel volume at the start of the decade.

"We're running at full capacity," said Myung-Sik Chung, president of Pohang Iron & Steel Co., Ltd. "The Korean economy is very strong. Steel consumption is rising at a very fast rate.

"We have a very strongly growing automobile industry," said Mr. Chung, who received a graduate degree in the U.S. "We have a thriving shipbuilding industry—the world's largest shipbuilding industry. We have a lot of industry clamoring for our steel."

There is good reason for the clamor. "Our domestic steel price is the lowest in the Free World," explained Mr. Chung.

Going with the price is an hourly labor cost well below the $20 plus of U.S. mills. "It's more like $4 an hour," said Mr. Chung. "That doesn't include all fringe benefits. They are fairly difficult to calculate."

Korea exports about 25 pct of its steel, with Japan, the U.S. and Asia providing markets. The net outflow is less than 25 pct. "We normally import about 10 pct of our steel," said Mr. Chung.

He was enthusiastic about prospects for USS-POSCO, the $400-million joint venture with USX Corp. The money is going to an ultra modern cold finishing complex at Pittsburg, Calif. When finished in 1989, the new facility is scheduled to receive more than 1 million tons of hot bands a year from Korea.

The voluntary restraint agreements that limit steel imports from Korea and other nations are due to expire in 1989, but U.S. mills are now pushing for a new restraint program. This could complicate the supply arrangement for USS-POSCO. "We're hopeful something can be arranged outside the VRAs," said Mr. Chung. "It will benefit both the U.S. and us."

3RD QUARTER EARNINGS
BACK IN THE BLACK

Brisk demand provided long-awaited price relief for the steel and nonferrous metals industries, and dramatic rebounds from the red ink of previous quarters.

For steel mills, the third quarter may have been a case of too much of a good thing.

The mills clearly had too much demand for the available supply. By the end of the quarter, major producers were way behind on their deliveries and there was no sign demand was easing.

The supply pinch was partly a matter of brisk ordering in what was expected to be a slack period. Steel shipments in the third quarter were up about 3 million tons from the same 1986 period.

The sustained market strength caught steel producers off balance, and it's possible supply problems will disappear when there has been time to gear production up to a higher level.

That could be, but people are starting to wonder if the steel industry hasn't gotten rid of too much capacity. Having suffered from a glut the last six years, steel producers probably aren't worrying about a deficit now. The tight supply has made it possible for industry to finally get some significant price relief.

There are, however, some worrisome aspects to the current market balance. Increased activity has sent scrap prices zooming. This is hurting all mills, but it is particularly painful for the electric furnace companies.

And the increases in steel prices may have contributed in some small way to the Federal Reserve's abortive exercise in monetary restraint. Always ready to tilt the inflation windmill, the Fed gave interest rates an upward nudge. The banks chimed in with several more nudges and the stock market collapsed.

The collapse came with a number of steel pension plans already underfunded. The stock slide could aggravate that condition to a critical extent.

All this may come under the head of borrowing trouble. Most steel companies made money in the third quarter. The industry may be moving out of its long recession.

With regard to pensions, one group of retirees received reassuring words from David M. Roderick, chairman of USX Corp. "We continue to be overfunded even at these depressed market levels," said Mr. Roderick. "Our pension fund is healthy."

He said the industry still has excess capacity, and he said USX has had no second thoughts about recently retired facilities. It was interesting, nevertheless, that he emphasized capacity increases rather than facility cutbacks.

"The continuous caster and hot strip mill improvements at Fairfield scheduled to come on line in December 1988 will actually increase our raw steel capacity by 10 pct," said Mr. Roderick.

USX had a net profit of $140 million in the third quarter. That compared with a big loss in 1986, when the USS division of USX was hit with a strike in August.

Bethlehem Steel Corp. went from a loss of $71 million in the third quarter of 1986 to a profit of $30 million in the third quarter of 1986.

National Steel went from a loss of $18.6 million in the third quarter of 1986 to a profit of $12.4 million in the third quarter of 1987.

"The substantial improvement in National's third quarter performance over that of a year ago is partly the result of vigorous market demand," said Howard M. Love, chairman of National.

Higher prices, cost cutting and reduced import competition also helped, said Mr. Love. Over the first nine months, National's production and shipments were the highest in six years. Like most other mills, the company ran into problems in maintaining the higher operating level.

"We were hurt early in the third quarter by an outage at the Great Lakes Division," said Mr. Love.

Also hurt by production snarls was Inland Steel Industries, Inc. A planned reline of Inland's big No. 7 blast furnace was partly responsible for holding Inland's third quarter earnings to $5.6 million. That was up from a loss of $4.7 million in the third quarter of 1986, but it was down from a profit of more than $17 million in the second quarter of 1987.

Weirton Steel Corp. continued to make a strong case for employee ownership. Weirton earned more than $33 million on sales of $329 million in the third quarter. A little more than $11 million of the profit was distributed to employees.

(Sales and earnings table appears on p. 34; story continues on p. 36.)

EARNINGS

STEEL: BACK ON THE PLUS SIDE

THIRD QUARTER PROFIT REPORT—1987 (In Millions of Dollars)

	EARNINGS				SALES		
	E/S	3rd Q 1987	3rd Q 1986	Pct Change	3rd Q 1987	3rd Q 1986	Pct Change
USX	3.6	140.0	(183.0)	–	$3,860.0	$3,343.0	+16.0
LTV	6.3	109.7	(2,078.7)	–	1,753.8	1,730.7	+1.3
BETHLEHEM	2.6	30.4	(71.3)	–	1,156.5	1,032.9	+12.0
INLAND	0.7	5.6	(4.7)	–	844.9	785.7	+8.0
ARMCO	3.7	25.8	(59.0)	–	692.5	633.2	+9.4
NATIONAL	2.0	12.4	(18.6)	–	622.8	531.3	+17.0
TOTAL	3.6	323.9	(2,415.3)	–	8,930.5	8,056.8	+11.0
WEIRTON	10.2	33.6	11.1	+202.0	329.6	295.1	+12.0
CYCLOPS	1.6	4.5	–	–	271.0	–	–
WHEEL-PGH	11.0	25.8	19.2	+34.0	237.8	228.8	+4.0
NUCOR	5.7	12.7	13.9	-9.0	221.9	195.7	+13.0
ALLEG. LUD.	4.1	8.6	–	–	209.1	–	–
LUKENS	4.6	6.1	1.8	+242.0	131.1	101.9	+29.0
CARPENTER	1.8	2.1	1.1	+91.0	115.2	117.4	-2.0
FLORIDA	4.3	4.9	5.8	-16.0	113.7	87.1	+31.0
NORTHWEST*	1.1	1.2	2.1	-43.0	107.6	95.2	+13.0
ACME	2.3	1.9	(15.1)	–	83.8	58.4	+44.0
QUANEX*	8.0	6.7	(3.7)	–	83.3	75.6	+10.0
BIRMINGHAM	6.5	5.3	2.6	+100.0	80.6	44.3	+82.0
LACLEDE	1.3	0.9	1.1	-21.0	66.1	60.3	+10.0
CF&I	–	(4.7)	(11.7)	–	60.9	42.1	+45.0
CSC	–	(0.3)	(5.0)	–	43.8	33.9	+29.0
EASTMET	1.6	0.5	(3.8)	–	30.1	19.9	+52.0
NEW JERSEY	3.4	0.7	4.1	-83.0	20.5	31.7	-35.0

( ) Indicates a loss *Quarter ended July 31, 1987

NONFERROUS: A NEW LUSTER

THIRD QUARTER PROFIT REPORT—1987 (In Millions of Dollars)

	EARNINGS			SALES		
	3rd Q 1987	3rd Q 1986	Pct Change	3rd Q 1987	3rd Q 1986	Pct Change
ALCAN	$122.0	$62.0	+97.0	$1,707.0	$1,482.0	+15.0
ALCOA	109.1	34.1	+220.0	1,382.0	1.098.0	+26.0
AMAX	176.2	2.6	+6677.0	872.0	270.0	+223.0
ASARCO	227.5	17.6	+1193.0	322.1	252.7	+28.0
BATTLE MOUNTAIN	12.1	6.3	+93.0	31.6	23.0	+37.0
BRUSH WELLMAN	4.3	5.7	-25.0	72.6	57.6	+26.0
COMINCO	7.0	(13.9)	–	208.1	216.3	-4.0
CYPRUS MINERALS	8.5	(9.5)	–	213.8	205.8	+4.0
ECHO BAY	13.6	6.3	+116.0	56.7	30.4	+87.0
ENGELHARD	14.7	12.2	+21.0	612.3	568.3	+8.0
FALCONBRIDGE*	17.0	6.0	+183.0	329.0	279.0	+18.0
HECLA MINING	9.6	(2.0)	–	30.1	16.0	+88.0
INCO	41.4	3.0	+1280.0	415.0	306.0	+36.0
INSPIRATION	8.4	4.6	+82.6	234.9	208.6	+12.6
KAISERTECH	13.4	(3.1)	–	523.1	525.0	–
LORNEX MINING*	11.1	10.3	+8.0	52.1	51.4	+1.0
NEWMONT MINING	21.4	46.0	-54.0	127.4	86.7	+47.0
NORANDA*	89.5	4.7	+1804.0	1,857.7	1,483.1	+25.0
OREMET	(0.3	(0.2)	–	12.7	8.8	+44.0
PHELPS DODGE	58.2	11.1	+424.0	377.4	188.0	+100.1
PINE POINT MINES*	10.6	5.2	+104.0	31.9	25.5	+25.0
REYNOLDS METALS	62.5	19.7	+217.0	1,110.9	921.5	+21.0
RIO ALGOM*	15.1	21.1	-28.0	352.1	337.5	+4.0
SOUTHWIRE	4.9	(6.1)	–	184.5	135.8	+36.0
VULCAN MATERIALS	38.7	36.8	+5.0	295.4	263.7	+12.0

( ) Indicates a loss * Canadian funds

"We entered the fourth quarter with a healthy order book and anticipate operating at high levels through the end of 1987 and possibly well into next year," said Herbert Elish, president of Weirton.

Armco Inc. reported a net income of $25.8 million for the third quarter. Armco's carbon steel and specialty steel operations were profitable. Carbon steel shipments were up 21 pct.

Nonferrous

The bottom lines in the nonferrous metals industries had little or nothing to do with the bottom in the third quarter.

Gains on sales volume, due in part to higher prices as well as increased demand, produced even sharp rises in profits.

That metal producers are creatures of volume was evident in the returns for most if not all of the industry's diverse members.

The Aluminum Co. of America (Alcoa) reported a dramatic increase in profits for the third quarter—to $109.1 million from $34.1 million in the same period of 1986 in which the company was hit by a strike. Sales were up almost 26 pct for the quarter—from $1.1 billion to $1.4 billion.

Alcoa officials said the aluminum market picked up speed in the second quarter and continued to gain in the third quarter, aided by strong demand for aluminum and higher prices for many fabricated products.

Alcan Aluminium, Ltd., posted profits of $122 million for the third quarter compared to $62 million for the same period of 1986. Sales in the period were up 15 pct to $1.7 billion compared to $1.5 billion in the third quarter of 1986.

Likewise, Reynolds Metals Co. reported record third quarter profits of $62.5 million compared with $19.7 million during the third quarter of 1986.

Reynolds President William O. Bourke attributed the gains to stringent cost controls, higher volume and improved prices for primary ingot and some fabricated products.

"An extremely tight aluminum supply situation, due to the combination of strong demand with depletion of excess inventories and the permanent closure of obsolete smelters around the world has caused a sharp increase in the price of ingot since the beginning of the year," he said.

Newly renamed Kaisertech, Ltd., reported profits of $13.4 million for the latest three-month span. Company officials noted that the results included a $16.1 million gain on the sale of a food service foil and foil container business as well as a loss provision of $13.0 million for costs related to a reduction in corporate staff. The same period a year ago, the company posted a loss of $3.1 million.

The aluminum industry's net shipments for the first eight months of this year totaled 11.1 billion lbs, an increase of almost 5 pct over the total for the same span in the last year, according to the Aluminum Association. And, the biggest percentage gainer was ingot. Shipments were up 10.8 pct over the previous year's pace—2.4 billion lbs compared to 2.1 billion lbs for the 1986 period.

Copper producers have no complaints about the price. The red metal's tag has climbed throughout the year.

The strength of the market prompted two major producers to reopen idled potlines. Alcoa said it would temporarily restart three potlines at facility in Rockdale, Texas. The big aluminum producer had permanently closed three of the eight potlines there in 1985. Those closures were part of corporate-wide shutdown of older and less efficient facilities which trimmed an estimated 350,000 tons of Alcoa capacity.

Kaiser Aluminum & Chemical Corp. also announced it would reopen half of the idled potline at its Ravenswood, Va., plant. Kaiser officials attributed the restart to strong demand and favorable prices for primary aluminum.

Copper producers have no complaints about the price. The red metal's tag has climbed throughout the year. And each penny-a-pound rise can produce more than a few extra dollars in profits.

Phelps Dodge Corp., the nation's largest copper producer, reported profits of $58.2 million for the third quarter, compared to $11.1 million for the third quarter of 1986, and noted that the gain reflected better prices for copper.

Phelps Dodge Chairman G. Robert Durham stressed that point in a speech given at a metal industry gathering held a little more than a week before the company made public its third quarter results.

"In the second quarter," he said, "the Comex spot price improved to 66.2¢, and our quarterly net income improved to $25.2 million. The Comex copper price improved further, to 78.3¢, in the third quarter. And while our third quarter results are still being compiled, they should come at better than $50 million...."

By early November, copper prices were over the $1 a lb mark and showing little or no sign of weakening as users scrambled to assure supply of the material for the first quarter of 1988.

Nickel also saw its fortunes on the rise this year. Prices on the LME and Comex have climbed steadily throughout the year. Market analysts explain the gains on the rising demand from stainless steel producers, low inventories among the nickel producers and little or no excess of scrap.

Inco, Ltd., posted a $41.4 million in profits for the latest quarter compared to $3.0 in the third quarter of 1986. The big Canadian nickel producer attributed the gains to "the strongest nickel and copper markets in five years."

By George J. McManus
and Michael Marley

MATERIAL PRICES

PRICE & PRODUCTION DATA

(Effective November 2, 1987)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	277	269	260	141
Pittsburgh	193	192	183	177
Youngstown	121	120	112	112
Lake Erie	153	150	149	109
Detroit	155	160	162	148
Chicago	502	495	515	341
Midwest	206	206	194	165
Southern	211	210	196	147
Western	57	56	56	43
U.S. Production	1,875	1,858	1,827	1,383

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium

Pellets (per iron unit natural)	gross-ton 58.0*
Pellets (per iron unit natural)	gross-ton 59.4**
Pellets (per iron unit natural)	gross-ton 72.45-86.9***
Mesabi, regular-unscreened	gross-ton 32.53
Mesabi, non-bessemer	gross-ton 30.03-31.53

*58.0¢—Mineral Services, Inc. as of 8/13/85. **59.4¢—Inland Steel Mining, 1/1/85 and Pickands Mather, 8/1/85, delivered hold of vessel, upper Lake ports. ***72.45¢—Cleveland-Cliffs as of 12/30/86, 72.5¢—U.S. Steel as of 8/16/85, 86.9¢—Oglebay Norton 3/25/82, Hanna Mining 2/26/82

STEEL PRODUCTION, COMPOSITE PRICES

(Effective November 2, 1987)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1987	To Date 1986
Net tons, in thousands	1,875	1,858	72,689	68,152
Capability Utilization Rate	86.8	86.1	77.9	63.8

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 10/4/87)	26.002	26.002	26.002	24.951
Pig Iron** (Net ton= 2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$110.50	$110.50	$107.83	$ 74.17
No. 2 bundles	$ 71.83	$ 71.83	$ 71.83	$ 50.50

Scrap Comparison (Gross T[illegible])				
No. 1 steel, Pittsburgh	$115.50	$115.50	$115.50	$ 78.50
No. 1 steel, Philadelphia	99.50	99.50	91.50	71.50
No. 1 steel, Chicago	116.50	116.50	116.50	72.50
No. 1 bundles, Detroit	131.50	131.50	131.50	75.50
Low Phos., Youngstown	118.50	118.50	118.50	75.50
No. 1 mach'y cast., Pgh	92.50	92.50	92.50	74.50
No. 1 mach'y cast., Phila	101.50	101.50	101.50	93.50
No. 1 mach'y cast., Chi	118.50	118.50	118.50	101.50

*Finished Steel Composite: Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective November 2, 1987) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	77.00	77.50	11/2/87
Copper (C)	90.00	88.00	11/2/87
Lead	42.00	38.00	7/6/87
Magnesium Ingot	153.00	148.00	12/9/85
Nickel (LME)	265.00	258.00	11/2/87
Zinc	43.00	45.50	9/9/87

ALUMINUM: Avg. for last week & previous week. COPPER (C)=cathode. LEAD: common grade. MAGNESIUM: 99.8% pig delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$248.00
Beryllium-copper, per lb. cont. Be	$152.00
Beryllium 97% powder 200	$196.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz	$469.30
Indium, per troy oz	$9.95
Iridium, per troy oz	$350.00
Magnesium sticks, 10,000 lbs	$2.12
Mercury, per 76-lb., f.o.b. N.Y.	$348.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz	$118.00
Platinum, per troy oz.	$528.00
Rhodium, per troy oz	$1,270.00
Silver ingots, per troy oz	$6.98
Titanium sponge, melt grade	$4.00
Tungsten powder, hyd red	$9.53-9.85
Vanadium	$6.00
Zirconium sponge	$11.20-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

Oct. 26—307.00
Oct. 27—309.00
Oct. 28—311.00
Oct. 29—310.00
Oct. 30—312.00

Scrap Prices

Brass Mill Scrap

(Cents per lb., over 20,000 lbs. add 1¢ per lb.)

	Solids	**Turnings**
Copper	70	65
Yellow brass	61½	60½
Red brass	62½	58½
Comm. bronze	63	58
Mang. bronze	46	45
Free cutting rod ends	57½	56½

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	68
No. 2 copper wire	59
Light copper	53

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	60
No. 2 copper wire	52
Light copper	45
No. 1 composition	50
No. 1 comp. turnings	50
Hvy. yellow brass solids	36
Hvy. yellow brass turnings	30
Radiators	33

Aluminum

New mixed clips	54 — 55
Old sheet	48 — 49
Old cast	48 — 49
Clean dry borings	48 — 49

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	47 — 48
Mixed L.C. clips	46 — 47
Old sheets and cast	40 — 41
Borings and turnings	35 — 36
Duraluminum clippings	40 — 41

Copper and Brass

No. 1 copper wire	54 — 58
No. 2 copper wire	46 — 47
Light copper	43 — 44
Radiators	31 — 32
No. 1 composition	44 — 45
No. 1 composition turnings	42 — 43
Cocks and faucets	38 — 39
Clean heavy yellow brass	35 — 36
Brass pipe	40 — 42
New soft brass clippings	51 — 52

Lead

Heavy soft lead	16 — 17
Whole batteries	2 — 3
Type metal	25 — 26
Electrotype	18 — 19

Nickel

Nickel solids	140 —150
Nickel rod ends	148 —158
Nickel sheets, clips	148 —158
Nickel turnings	34 — 44

Zinc

New zinc clippings	16 — 17
Old diecast zinc	12 — 13

MATERIAL PRICES

EFFECTIVE NOVEMBER 2, 1987

(Effective November 2, 1987) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of Iron Age editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 115.00 to	$ 116.00
No. 2 hvy. melting	97.00 to	98.00
No. 1 dealer bundles	159.00 to	160.00
No. 1 factory bundles (auto)	159.00 to	160.00
No. 2 bundles	64.00 to	65.00
No. 1 busheling	159.00 to	160.00
Machine shop turnings	13.00 to	14.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	45.00 to	46.00
Low phos. punchings plate	154.00 to	155.00
Heavy turnings	97.00 to	98.00
No. 1 RR hvy. melting	137.00 to	138.00
Rails, 2 ft. and under	162.00 to	163.00
Scrap rails, random lgth	133.00 to	134.00
RR specialties	162.00 to	163.00
No. 1 machinery cast	92.00 to	93.00
Cupola cast	84.00 to	85.00
Heavy breakable cast	30.00 to	31.00
Stainless		
18-8 bundles and solids	670.00 to	680.00
18-8 turnings	570.00 to	580.00

Chicago

No. 1 hvy. melting	$ 116.00 to	$ 117.00
No. 2 hvy. melting	112.00 to	113.00
No. 1 dealer bundles	161.00 to	162.00
No. 1 factory bundles (auto)	154.00 to	155.00
No. 2 dealer bundles	88.00 to	89.00
No. 1 busheling	144.00 to	145.00
Shredder scrap	134.00 to	135.00
Machine shop turnings	40.00 to	41.00
Mixed borings and turnings	32.00 to	33.00
Shoveling turnings	49.00 to	50.00
Cast iron borings	54.00 to	55.00
Low phos. forge crop	149.00 to	150.00
Low phos. punchings plate 1/4 in. and heavier	165.00 to	166.00
Low phos. 2 ft. and under	160.00 to	161.00
No. 1 RR hvy. melting	134.00 to	135.00
Scrap rails random lgth	125.00 to	126.00
Reroller rails	139.00 to	140.00
Rails, 2 ft. and under	159.00 to	160.00
RR couplers and knuckles	134.00 to	135.00
RR car axles	159.00 to	160.00
No. 1 machinery cast	118.00 to	119.00
Cupola cast	107.00 to	108.00
Stove plate	117.00 to	118.00
Steel car wheels	154.00 to	155.00
Stainless		
18-8 bundles and solids	630.00 to	640.00
18-8 turnings	490.00 to	500.00
430 bundles and solids	170.00 to	180.00
430 turnings	85.00 to	95.00

Philadelphia

No. 1 hvy. melting	$ 98.00 to	$ 101.00
No. 2 hvy. melting	88.00 to	91.00
No. 1 dealer bundles	132.00 to	135.00
No. 2 dealer bundles	61.00 to	64.00
No. 1 busheling	127.00 to	130.00
Shredder scrap	130.00 to	133.00
Machine shop turnings	26.00 to	29.00
Mixed borings and turnings	26.00 to	29.00
Shoveling turnings	44.00 to	47.00
Low phos. 5 ft. and under	114.00 to	117.00
Low phos. 2 ft. punchings	145.00 to	148.00
Electric furnace bundles	147.00 to	150.00
RR specialties	120.00 to	123.00
Rails, 2 ft. and under	142.00 to	145.00
Cupola cast	94.00 to	97.00
Heavy breakable cast	52.00 to	55.00
No. 1 machinery cast	100.00 to	103.00

Detroit

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 89.00 to	$ 90.00
No. 2 hvy. melting	87.00 to	88.00
No. 1 dealer bundles	131.00 to	132.00
No. 2 bundles	67.00 to	68.00
No. 1 busheling	129.00 to	130.00
Drop forge flashings	91.00 to	92.00
Machine shop turnings	42.00 to	43.00
Mixed borings and turnings	15.00 to	16.00
Shoveling turnings	42.00 to	43.00
Cast iron borings	38.00 to	39.00
Heavy breakable cast	40.00 to	41.00
Mixed cupola cast	57.00 to	58.00
Automobile cast	79.00 to	80.00
Stainless		
18-8 bundles and solids	600.00 to	610.00
18-8 turnings	290.00 to	300.00
430 bundles and solids	135.00 to	145.00

Youngstown

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 101.00 to	$ 102.00
No. 2 hvy. melting	92.00 to	93.00
No. 1 dealer bundles	141.00 to	142.00
No. 2 dealer bundles	60.00 to	61.00
Machine shop turnings	26.00 to	27.00
Shoveling turnings	26.00 to	27.00
Low phos. plate	118.00 to	119.00
Electric furnace bundles	121.00 to	122.00
Galvanized bundles	118.00 to	119.00

Cleveland

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 96.00 to	$ 97.00
No. 2 hvy. melting	85.00 to	86.00
No. 1 dealer bundles	141.00 to	142.00
No. 1 factory bundles	144.00 to	145.00
No. 2 bundles	56.00 to	57.00
No. 1 busheling	135.00 to	136.00
Machine shop turnings	31.00 to	32.00
Shoveling turnings	31.00 to	32.00
Cast iron borings	31.00 to	32.00
Cut structural & plates, 5 ft. and under	114.00 to	115.00
Cut structural & plates, 2 ft. and under	137.00 to	138.00
Low phos. punchings plate	140.00 to	141.00
Foundry steel, 2 ft. & under	87.00 to	88.00
No. 1 RR hvy. melting	102.00 to	103.00
Rails, 2 ft. and under	134.00 to	135.00
Rails, 18 in. and under	136.00 to	137.00
No. 1 machinery cast	88.00 to	89.00
Mixed cast	55.00 to	56.00
Stainless		
18-8 bundles	605.00 to	615.00
18-8 turnings	295.00 to	305.00
430 bundles	140.00 to	150.00

Buffalo

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 84.00 to	$ 85.00
No. 2 hvy. melting	74.00 to	75.00
No. 1 busheling	129.00 to	130.00
No. 1 dealer bundles	129.00 to	130.00
No. 2 bundles	41.00 to	42.00
Machine shop turnings	18.00 to	19.00
Mixed borings and turnings	18.00 to	19.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	29.00 to	30.00
Low phos. plate	115.00 to	116.00
Structural and plate, 2 ft. and under	119.00 to	120.00
Rails, 2 ft. and under	134.00 to	135.00
Scrap rails, random lgth	109.00 to	110.00
No. 1 machinery cast	89.00 to	90.00
No. 1 cupola cast	77.00 to	78.00

St. Louis

No. 1 hvy. melting	$ 109.00 to	$ 110.00
No. 2 hvy. melting	99.00 to	100.00
No. 1 busheling	135.00 to	136.00
No. 1 dealer bundles	139.00 to	140.00
No. 2 bundles	94.00 to	95.00
Machine shop turnings	31.00 to	32.00
Shoveling turnings	35.00 to	36.00
Cast iron borings	41.00 to	42.00
No. 1 RR hvy. melting	119.00 to	120.00
Rails, random length	118.00 to	119.00
Rails, 5 ft. and under	129.00 to	130.00
Plate and structural, 5 ft. and under	119.00 to	120.00
Cupola cast	79.00 to	80.00
Heavy breakable cast	43.00 to	44.00
Stove plate	107.00 to	108.00
Steel car wheels	139.00 to	140.00
Rerolling rails	130.00 to	131.00
Unstripped motor blocks	60.00 to	61.00

Birmingham

No. 1 hvy. melting	$ 102.00 to	$ 103.00
No. 2 hvy. melting	95.00 to	96.00
No. 1 dealer bundles	114.00 to	115.00
No. 2 bundles	77.00 to	78.00
No. 1 busheling	114.00 to	115.00
Shredder scrap	120.00 to	121.00
Machine shop turnings	49.00 to	50.00
Shoveling turnings	59.00 to	60.00
Cast iron borings	40.00 to	41.00
Electric furnace bundles	90.00 to	91.00
Elec. furnace, 3 ft. & under	92.00 to	93.00
Structural and plate, 2 ft.	124.00 to	125.00
Structural and plate, 4 ft.	119.00 to	120.00
No. 1 RR hvy. melting	119.00 to	120.00
Scrap rails, random lgth	104.00 to	105.00
Rails, 2 ft. and under	124.00 to	125.00
Angles and splice bars	112.00 to	113.00
No. 1 cupola cast	92.00 to	93.00
Unstripped motor blocks	89.00 to	90.00

Cincinnati

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	88.00 to	89.00
No. 1 dealer bundles	140.00 to	141.00
No. 2 bundles	59.00 to	60.00
Machine shop turnings	27.00 to	28.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	39.00 to	40.00
Low phos. 18 in. and under	140.00 to	141.00
Rails, random length	116.00 to	117.00
Rails, 2 ft. and under	144.00 to	145.00
No. 1 cupola cast	83.00 to	84.00
Heavy breakable cast	44.00 to	45.00
Drop broken cast	93.00 to	94.00

New York

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 59.00 to	$ 61.00
No. 2 hvy. melting	52.00 to	53.00
No. 2 dealer bundles	35.00 to	37.00
Mixed borings and turnings	10.00 to	11.00
Machine shop turnings	4.00 to	6.00
Shoveling turnings	10.00 to	12.00
Clean cast, chem. borings	35.00 to	36.00
No. 1 machinery cast	79.00 to	80.00
Mixed yard cast	50.00 to	51.00
Heavy breakable cast	15.00 to	17.00
Stainless		
18-8 prepared solids	530.00 to	550.00
18-8 turnings	385.00 to	405.00
430 prepared solids	105.00 to	115.00
430 solids	100.00 to	110.00

Boston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 65.00 to	$ 67.00
No. 2 hvy. melting	55.00 to	57.00
No. 1 dealer bundles	88.00 to	90.00
No. 2 bundles	30.00 to	32.00
No. 1 busheling	86.00 to	88.00
Shredder scrap	78.00 to	80.00
Machine shop turnings	18.00 to	20.00
Shoveling turnings	23.00 to	25.00
No. 1 machinery cast	85.00 to	87.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	22.00 to	24.00

San Francisco

No. 1 hvy. melting	$ 63.00 to	$ 65.00
No. 2 hvy. melting	57.00 to	59.00
No. 1 dealer bundles	54.00 to	56.00
No. 2 dealer bundles	42.00 to	43.00
Machine shop turnings	15.00 to	16.00
Cast iron borings	15.00 to	16.00
No. 1 cupola cast	82.00 to	84.00

Los Angeles

No. 1 hvy. melting	$ 61.00 to	$ 63.00
No. 2 hvy. melting	55.00 to	57.00
No. 1 dealer bundles	53.00 to	55.00
No. 2 dealer bundles	39.00 to	40.00
Machine shop turnings	12.00 to	13.00
Shoveling turnings	13.00 to	14.00
Cast iron borings	13.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	70.00 to	72.00
No. 1 cupola cast	74.00 to	76.00

Seattle

No. 1 hvy. melting	$ 83.00 to	$ 84.00
No. 2 hvy. melting	75.00 to	76.00
No. 2 bundles	59.00 to	60.00
No. 1 cupola cast	89.00 to	90.00
Mixed yard cast	80.00 to	82.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 103.00
No. 2 hvy. melting, cut 2 ft. and under	90.00
No. 1 dealer bundles	131.00
No. 2 bundles	69.00
Mixed steel scrap	75.00
Bush. new fact. prep'd	126.00
Bush. new fact. unprep'd	109.00
Machine shop turnings	36.00
Short steel turnings	38.00
Mixed borings and turning	25.00
Cast scrap	105.00

Houston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 92.00 to	$ 93.00
No. 2 hvy. melting	82.00 to	83.00
No. 2 bundles	50.00 to	51.00
Machine shop turnings	35.00 to	36.00
Crushed turnings	45.00 to	46.00
Shredder scrap	107.00 to	108.00
Cut structural plate, 2 ft. and under	106.00 to	107.00
Cut structural plate, 5 ft. and under	94.00 to	95.00
Unstripped motor blocks	60.00 to	61.00
Cupola cast	95.00 to	96.00

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IRON AGE

THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS
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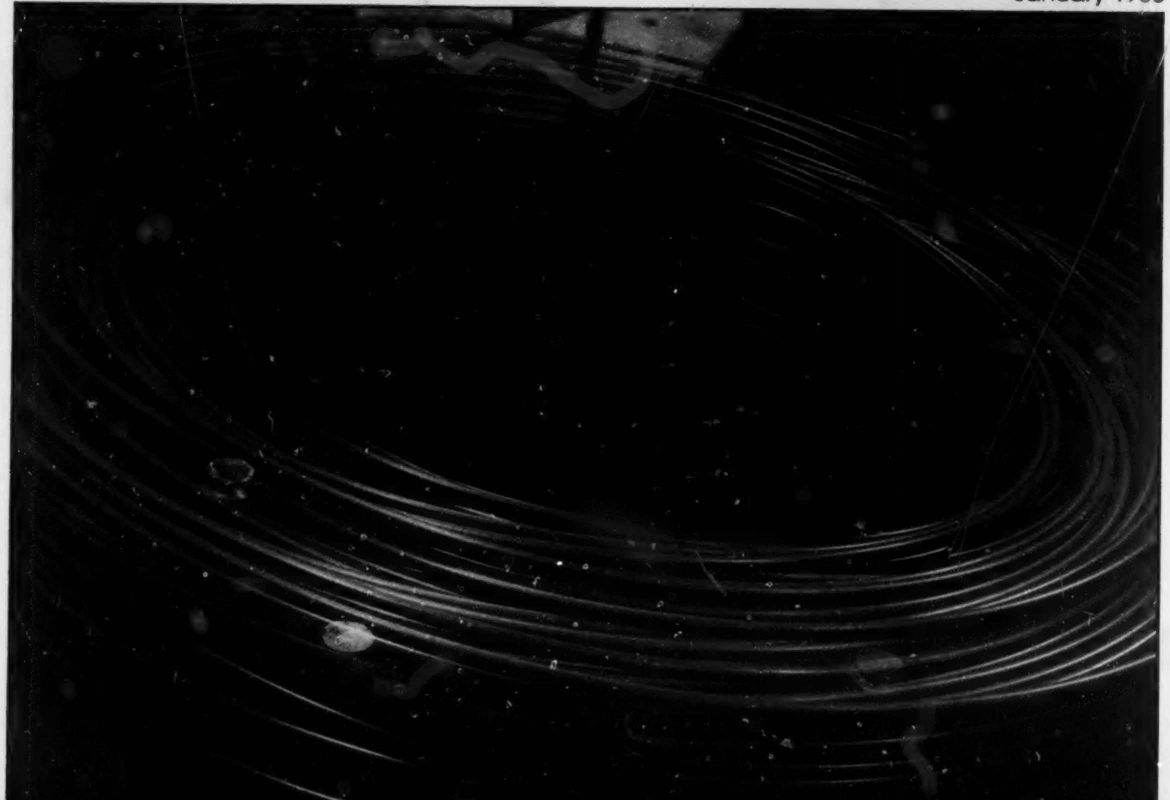

THE NEXT GENERATION OF ROD MILLS

IRON AGE
THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

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LETTERS

Thin Strip Casting

I read with interest your article "Steelmakers pursue thin strip casting" (*Iron Age*, August 1987, p. 14), especially the results of the Armco-Westinghouse project for the DOE.

Dr. Alan Male of Westinghouse reports a great deal of success with the melt overflow technique producing strip 0.020 in. thick. As the developer and patent holder of the melt overflow process, this result is very encouraging to us at Ribtec. Since 0.020 in. is heavy enough for a certain amount of cold processing, this test is a significant step in moving from the liquid steel stage to the final product.

Lloyd E. Hackman
President
Ribtec Technology Corp.

Matching Wits

I read your editorial every month and enjoy very much your "stand back and look at the wider picture" views. Keep up the good work.

(Regarding) your latest inventive and interesting survey idea ("1995: Match your wits with those at the top," *Iron Age*, October 1987, p.5.) The span between now and 1995, in my view, will pass through two major cycles, which make the questionnaire less indicative of how to plan and how to respond as executives, unless the shorter range situations are accurately assessed.

Cycle one will see the temporary drop in the U.S. dollar make foreign imports expensive and U.S. exports more attractive.

This is the phase we are entering now, and our shortsighted CEO's, accountants and MBA's will think we are reborn again. When in reality, foreign excellence and strength will be the main reason for the U.S. dollar drop.

The weak U.S. dollar will give us a temporary boost and an immediate return to temporary prosperity, even a good deficit reduction. This will automatically produce a stronger U.S. dollar, much stronger that the present.

As the U.S. dollar climbs, cycle two begins (about late 1988-89) and the slow gradual return of the reality of obsolete industry and misinformed and outdated CEO's and advisors.

The above seem obvious to me, and I would see our present and future challenges in avoiding excesses while the world supply and demand trends are so cyclical. Future CEO's must develop our underutilized local talent.

A. Forgeron
Sydney Steel Corp.
Sydney, N.S.

....This is a great idea. I'll give more weight to your survey than the Conference Board's.

Eugene E. Paul
Past President
American Foundrymen's Society
Leesburg, Ind.

...I decided to do this quickly to give 'gut reaction' answers, not those cleverly thought-out by the head honchos. I look forward to the comparison.

Frank Johnson
President
Drever Co.
Huntingdon Valley, Pa.

I've devoted all of three minutes to answering these questions. Although I'm not sure my answers will agree with those of the experts, I'll bet they will be more accurate. Let's revisit in 1995.

Herb Townsend
Bethlehem Steel Corp.
Bethlehem, Pa.

This is a prime example of how you can word questions in a survey to obtain the results you want to see. I don't consider this very scientific at all. Regardless, attached are my 'prompted' answers.

Jim Klick
Plant Metallurgist
J&L Specialty Products Corp.
Louisville, Ohio

Letters, preferably typewritten, should be addressed to Editor, Iron Age, 201 King of Prussia Road, Radnor, PA 19089. Unsigned letters are not published, but names will be withheld on request.

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ANALYSTS ARE SELLING STEEL'S BOOM SHORT

Inventory adjustment? The USS strike? Some steel executives say they are getting a little tired of analysts who say the economy is faltering and that the steel industry isn't booming.

'If we're only running at 81 pct of capacity, it's the highest 81 pct that I've ever seen.'

Richard P. Simmons, chairman, Allegheny Ludlum Corp.

Is the booming steel market providing a true reading of the economy?

Until recently, it was assumed the answer was no. Industry analysts said there was nothing in the government's statistics to suggest the steel boom reflected decisive changes in the domestic economy or the trade balance.

The boom was attributed to a number of special and temporary factors. Price miscalculations had supposedly forced abnormal inventory replenishment. The strike at the USS division of USX Corp. had reduced steel supply.

Those explanations were still being offered toward year's end, but in the opinion of some steel executives, they were starting to wear thin. "If there's a lot of inventory out there, we can't find it," said Richard P. Simmons, chairman of Allegheny Ludlum Corp. "The service centers have very low inventories."

By the fourth quarter, production at USS was back near normal. "We're operating at very high levels," said David M. Roderick, chairman of USX. "At a number of our locations, we have practically gone through our recall list," said Mr. Roderick in October.

With the boom continuing and with the early theories looking questionable, Mr. Simmons felt the steel market was providing an accurate picture while the government's numbers were giving a false impression, or at least an outdated one.

"The economy is stronger than the statistics would indicate," he said. Producing stainless and electrical steels, Allegheny Ludlum has been enjoying sustained good times.

"We see stainless flat-rolled setting a new record this year," said Mr. Simmons in November. "The market is running at a million-ton rate."

For Allegheny ~~Ludlum,~~ the key indicator is cold-rolled stainless strip. Nearly all of this is shipped directly to manufacturers and is unaffected by service center inventory swings. In the period starting in May and extending into the fourth quarter, the company's orders for stainless strip were double the historic rate.

Others feel that the economic recovery still has not reached all segments of the nation's economy.

"We had a bi-coastal boom," said David Lloyd-Jacob, chairman of Levinson Steel Co.

Mr. Lloyd-Jacob was referring to the widely held view that we are nearing the end of a long boom. There might have been good times in the East Coast financial centers and on the West Coast, he indicated, but the inland manufacturing areas are just starting to recover from a six-year recession.

"We were referred to as the flyover people," said Mr. Lloyd-Jacob.

In steel and in manufacturing, he said, attitudes as well as orders, have just started to recover. "We all had a lack of self-confidence," he explained.

Price weakness continued after demand improved because of lingering paranoia, he said.

The tight supply isn't confined to steel, he noted. "Look at aluminum," he said. "It's worse in aluminum."

Mr. Simmons said Allegheny Ludlum was finding strength in its buying as well as its selling. Supplies of machinery, materials and everything else have tightened, he said.

With widespread signs of high operating levels, he added, it was difficult to believe the government's estimates of plant utilization.

"If we're only running at 81 pct of capacity," he said, "it's the highest 81 pct I've ever seen."

Mr. Simmons also suspects there is far less plant capacity available than the government realizes. If he is right, there should now be pressure on industry to expand. The steel lag of the past six years has been partly due to the absence of massive expansion projects.

Allegheny Ludlum's experience runs counter to the general perception in another important re-

1986 INDIRECT STEEL TRADE

	IMPORTS		EXPORTS		NET BALANCE	
	In Millions of Tons	Pct of Tons	In Millions of Tons	Pct of Tons	In Millions of Tons	Pct of Tons
Automotive	8.7	50	2.9	35	-5.8	62
Machinery	5.3	30	3.8	47	-1.5	16
Other	3.5	20	1.5	18	-2.0	22
Total	17.5	100	8.2	100	-9.3	100

1986 AUTOMOTIVE INDIRECT STEEL TRADE

(In Millions of Net Tons)

	IMPORTS	EXPORTS	NET BALANCE
Motor Vehicles	7.5	1.3	-6.2
Stampings, Parts and Accessories	1.2	1.6	0.4
Total	8.7	2.9	-5.8

Source: AISI

spect. It's generally assumed that the weakening of the dollar has had little effect on the nation's trade deficit. Allegheny Ludlum's exports were up 41 pct in the first nine months of 1987 while imports of stainless sheet and strip were down 23 pct in this period.

Trade Pattern

The stainless trade pattern was roughly in line with overall direct steel trade. Through the first eight months of 1987, steel imports were down 4 pct while exports were up 28 pct.

The overall merchandise trade balance did decline in September of 1987, but it was still over $14 billion. With regard to indirect steel trade, a recent report by the American Iron and Steel Institute (AISI) indicated the U.S. situation had worsened.

In 1986, said AISI, imports of autos, machines and other metal items represented 17.5 million tons of steel.

The imports were partly offset by 8.2 million tons of steel bearing exports, but the net intake of 9.3 million tons was nearly double that of 1984.

These returns were disappointing, but not entirely surprising. The dollar didn't start weakening until 1985, and it takes a long time for currency swings to change trade patterns. When trade statistics for 1987 are available, they will hopefully show some positive results.

"We see imports starting to improve and exports starting to stabilize," said Larry Mosser, senior industry analyst at Bethlehem Steel Corp. "You're not going to see the deficit increase."

Stability would be a step in the right direction for indirect steel trade after the growing steel deficits of recent years. "All it has to do is quit getting worse and it gets better," said Mr. Simmons. With imports static, he explained, domestic producers will share in the growth of the economy.

A dramatic reduction in the steel deficit was considered unlikely by Mr. Mosser, whose company has played a leading role in the calculation of indirect trade.

"The data we look at indicate there's still a significant deficit," said Mr. Mosser.

"You're still going to get a lot of imported autos," said David Long, another industry analyst at Bethlehem. He noted that autos account for around 50 pct of the indirect steel imports.

Mr. Roderick of USX said the weakening of the dollar had created export opportunities. "We already have a cost advantage versus the Europeans and versus the Japanese," he said. "The lower the dollar goes in value, the more competitive we become."

Mr. Roderick said the strength of the domestic market had made it impossible for USS to exploit its cost advantage. Should domestic demand ease, he said, the untapped foreign business will be used to maintain production.

Mr. Simmons observed that we seem to be in a cycle where the economy is running ahead of the statistics and the predictions. Going into 1987, he said, people were predicting steel shipments as low as 65 million tons. The estimates were raised to 70 million and then to 75 million tons.

Hopefully, things will continue to turn out better than expected.

By George J. McManus

ANNUAL STATISTICAL REVIEW OF PRODUCTION AND PRICES

U.S. Monthly Raw Steel† Production, Net Tons

	1970	1971	1972	1973	1974	1975	1976	1977	1978
Jan.	11,243,000	11,274,000	10,001,000	12,373,000	12,726,000	11,584,000	9,835,000	9,089,000	10,301,000
Feb.	10,498,000	10,874,000	9,980,000	11,626,000	11,598,000	10,862,000	9,907,000	8,859,000	9,643,000
Mar.	11,886,000	12,645,000	11,588,000	13,088,000	12,758,000	11,980,000	11,294,000	11,049,000	11,083,000
Apr.	11,386,000	12,565,000	11,588,000	12,789,000	12,442,000	10,667,000	11,439,000	11,167,000	11,528,000
May	11,574,000	12,920,000	11,937,000	13,174,000	12,752,000	9,864,000	12,136,000	12,201,000	12,320,000
June	11,323,000	11,491,000	10,980,000	12,488,000	12,185,000	8,744,000	11,605,000	11,364,000	11,861,000
July	10,781,000	9,942,000	10,341,000	12,290,000	12,155,000	8,370,000	11,400,000	10,319,000	11,388,000
Aug.	10,765,000	5,774,000	10,842,000	12,181,000	11,837,000	8,648,000	11,128,000	10,392,000	11,550,000
Sept.	10,727,000	7,678,000	10,913,000	12,229,000	11,849,000	9,295,000	10,463,000	10,050,000	11,467,000
Oct.	10,699,000	8,211,000	11,657,000	12,876,000	12,617,000	9,214,000	10,278,000	10,442,000	12,105,000
Nov.	10,008,000	8,053,000	11,398,000	12,587,000	11,614,000	8,709,000	9,494,000	9,748,000	11,654,000
Dec.	10,438,000	8,784,000	11,878,000	12,722,000	10,960,000	8,846,000	9,215,000	10,031,000	11,812,000
Total	131,514,000	120,443,000	133,241,000	150,799,000	145,720,000	116,783,000	128,000,000	125,333,000	137,031,000
	1979	1980	1981	1982	1983	1984	1985	1986	1987
Jan.	11,105,000	10,701,000	10,590,000	7,737,000	5,570,000	7,970,000	6,984,000	7,666,000	6,248,000
Feb.	10,562,000	10,332,000	10,028,000	7,178,000	5,676,000	8,142,000	6,851,000	7,171,000	5,992,000
Mar.	12,576,000	11,439,000	11,744,000	8,049,000	7,127,000	9,056,000	8,269,000	7,947,000	7,375,000
Apr.	12,196,000	10,698,000	11,243,000	7,006,000	7,292,000	8,997,000	7,872,000	7,787,000	7,402,000
May	12,789,000	9,226,000	11,423,000	6,678,000	7,412,000	9,174,000	7,830,000	7,616,000	7,641,000
June	12,230,000	7,501,000	10,451,000	6,050,000	6,993,000	7,945,000	7,292,000	6,730,000	7,349,000
July	11,821,000	6,796,000	10,160,000	5,719,000	6,921,000	7,460,000	7,010,000	6,352,000	7,342,000
Aug.	11,309,000	7,019,000	10,120,000	5,538,000	7,020,000	6,915,000	7,130,000	5,668,000	7,494,000
Sept.	10,541,000	7,767,000	9,618,000	5,299,000	7,134,000	6,378,000	6,924,000	5,644,000	7,694,000
Oct.	10,810,000	9,442,000	9,003,000	5,262,000	7,692,000	6,703,000	7,351,000	6,087,000	8,073,000
Nov.	9,997,000	10,057,000	7,962,000	4,546,000	7,263,000	6,422,000	6,987,000	5,860,000	8,000,000*
Dec.	9,996,000	10,180,000	7,671,000	4,456,000	6,991,000	6,013,000	6,500,000	5,877,000	7,800,000*
Total	136,341,000	111,835,000	120,828,000	74,577,000	84,615,000	2,528,000	87,000,000	80,405,000	88,380,000*

*Estimate

Source: AISI

†Steel in first solid state after melting suitable for further processing or sale, including ingots, steel castings and continuous or pressure cast blooms, billets, slabs, or other product forms.

U.S. Raw Steel Production, Rate of Capability Utilization

	1970	1971	1972	1973	1974	1975†	1976	1977	1978	1979	1980	1981	1982	1983	984	1985	1986	1987
Jan.	104.1	104.3	92.6	114.5	117.8	90.4	74.4	66.8	77.2	83.5	82.7	79.9	59.3	43.4	69.6	60.9	69.4	65.5
Feb.	107.6	111.4	98.7	119.1	118.8	93.8	80.1	72.1	80.1	87.9	85.3	83.7	60.9	49.0	76.0	66.1	71.8	69.5
Mar.	110.0	117.0	107.3	121.1	118.1	93.4	85.4	81.2	83.1	94.5	88.4	88.6	61.7	55.5	79.1	72.1	71.9	77.3
Apr.	108.9	120.2	110.8	122.3	119.0	84.9	88.4	83.3	88.5	93.4	83.0	87.7	55.2	58.9	80.8	71.6	73.5	80.3
May	107.1	119.6	110.5	121.9	118.0	75.9	90.8	88.1	91.5	94.8	69.6	86.2	50.9	57.9	79.8	68.9	69.5	80.2
June	108.3	109.9	105.0	119.4	116.5	69.6	89.7	84.9	91.1	93.7	58.4	81.5	47.4	56.5	71.4	66.3	63.5	79.7
July	99.8	92.0	95.7	113.8	112.5	65.1	84.8	76.7	85.1	89.9	53.1	77.6	43.8	54.3	65.3	62.1	59.2	77.3
Aug.	99.6	53.4	100.4	112.7	109.6	67.3	82.8	77.2	86.3	86.0	54.8	77.3	42.4	55.1	60.5	63.2	52.8	79.1
Sept.	102.6	73.4	104.4	117.0	113.3	74.7	80.4	77.2	88.6	82.8	62.7	75.9	41.9	57.8	57.7	63.4	54.3	83.9
Oct.	99.0	76.0	107.9	119.2	116.8	69.0	75.8	77.7	88.1	84.4	72.2	68.7	40.2	60.2	49.7	65.2	56.8	84.4
Nov.	95.7	77.0	109.0	120.4	111.1	67.4	72.2	75.0	89.4	80.6	79.5	62.8	35.9	58.7	48.4	59.0	56.5	84.0*
Dec.	96.6	81.3	109.9	117.7	101.4	66.2	67.8	74.7	87.7	78.0	77.8	58.6	34.0	54.7	45.1	58.0	82.0	54.9*
Average	103.4	94.7	104.5	118.5	114.5	76.2	80.9	78.4	86.8	87.8	72.8	78.3	48.4	56.2	65.3	64.7	62.8	77.0*

*Estimate.

†Rate of Capability Utilization, begun January, 1976, revised back to January, 1975.

Source: AISI

World Steel Production

Raw steel, thousands of metric tons

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987*
Argentina	2,700	2,800	3,200	2,700	2,500	2,900	2,900	2,600	2,900	3,200	3,600
Australia	7,300	7,600	8,100	7,600	7,600	6,400	5,600	6,300	6,400	6,700	6,100
Austria	4,100	4,300	4,900	4,600	4,700	4,300	4,400	4,900	4,700	4,300	4,300
Belgium	11,300	12,600	13,400	12,300	12,300	10,000	10,200	11,300	10,700	9,700	9,700
Brazil	11,300	12,200	13,900	15,300	13,200	13,000	14,700	18,400	20,500	21,000	21,900
Bulgaria	2,600	2,500	2,500	2,600	2,500	2,600	2,800	2,900	2,900	2,800	2,700
Canada	13,600	14,900	16,100	15,900	14,800	11,900	12,800	14,700	14,600	14,100	14,700
China	23,700	31,800	34,500	37,100	35,600	37,100	40,000	43,400	46,700	51,900	55,000
Czechoslovakia	15,100	15,300	14,800	14,900	14,300	15,000	15,000	14,800	15,000	15,100	15,300
France	22,100	22,800	23,400	23,200	21,300	18,400	17,600	19,000	18,800	17,900	17,600
West Germany	39,000	41,300	46,000	43,900	41,600	35,900	35,700	39,400	40,500	37,100	36,700
East Germany	6,900	7,000	7,000	7,300	7,500	7,200	7,200	7,600	7,900	7,900	7,800
Hungary	3,700	3,800	3,900	3,800	3,600	3,700	3,600	3,800	3,600	3,700	3,600
India	10,000	10,100	10,100	9,500	10,800	11,000	10,200	10,500	11,900	12,200	12,500
Italy	23,300	24,300	24,300	25,500	24,800	24,000	21,800	24,100	23,900	22,900	22,700
Japan	102,400	102,100	111,800	111,400	101,700	99,500	97,200	105,600	105,300	98,300	96,900
North Korea	4,000	5,100	5,400	5,800	5,500	5,800	6,100	6,500	8,400	9,000	9,300
South Korea	4,300	5,000	7,600	8,600	10,800	11,800	11,900	13,000	13,500	14,600	16,500
Luxembourg	4,300	4,800	5,000	4,600	3,800	3,500	3,300	4,000	3,900	3,700	3,300
Mexico	5,600	6,700	7,000	7,100	7,600	7,100	6,900	7,500	7,300	7,200	7,300
The Netherlands	4,900	5,600	5,800	5,300	5,500	4,400	4,500	5,700	5,500	5,300	5,100
Poland	17,800	19,300	19,200	19,500	15,700	14,800	16,200	16,500	16,100	17,200	17,000
Romania	11,500	11,800	12,900	13,200	13,000	13,100	12,600	14,400	13,800	14,300	14,100
South Africa	7,300	7,900	8,900	9,100	9,000	8,200	7,000	7,700	8,500	8,900	8,900
Spain	11,200	11,300	12,200	12,700	12,900	13,200	13,000	13,500	14,200	12,000	11,600
Sweden	4,000	4,300	4,700	4,200	3,800	3,900	4,200	4,700	4,800	4,600	4,500
United Kingdom	20,500	20,400	21,500	11,300	15,600	13,700	15,000	15,100	15,700	14,700	17,100
U.S.S.R.	146,700	151,400	149,100	147,900	148,500	147,200	52,500	154,300	154,700	160,500	159,000
United States	114,700	124,000	123,300	101,700	108,800	67,600	76,800	83,900	80,100	73,800	79,100
Yugoslavia	3,200	3,500	3,500	3,600	3,000	3,800	4,100	4,300	4,500	4,500	4,400
Others	17,700	21,100	24,600	25,700	22,700	24,300	13,600	15,000	16,800	17,900	17,800
Total	675,600	717,200	746,400	716,000	706,900	645,200	663,200	710,100	719,800	714,400	725,100

*IA Estimates.

Source: International Iron and Steel Institute

U.S. Yearly Raw Steel Production*

Net Tons

	Openhearth**		Basic Oxygen Process		Bessemer***		Electric‡		
	Production	Percent of Total Output	Production	Percent of Total Output	Production	Percent of Total Output	Production	Percent of Total Output	Total Production
1966	85,025,000	63.4	33,928,000	25.4	278,000	0.2	14,870,000	11.0	134,101,000
1967	70,690,000	55.6	41,434,000	32.5	.....	...	15,089,000	11.9	127,213,000
1968	65,836,000	50.1	48,812,000	37.2	.....	...	16,814,000	12.7	131,462,000
1969	60,894,000	43.1	60,236,000	42.7	.....	...	20,132,000	14.2	141,262,000
1970	48,022,000	36.6	63,330,000	48.2	.....	...	20,162,000	15.2	131,514,000
1971	35,559,000	29.5	63,943,000	53.1	.....	...	20,941,000	17.4	120,443,000
1972	34,936,000	26.2	74,584,000	56.0	.....	...	23,721,000	17.8	133,241,000
1973	39,780,000	26.4	83,260,000	55.2	.....	...	27,759,000	18.4	150,799,000
1974	35,499,000	24.3	81,552,000	56.0	.....	...	28,669,000	19.7	145,720,000
1975	22,161,000	19.1	71,801,000	61.5	.....	...	22,680,000	19.4	116,642,000
1976	23,470,000	18.3	79,918,000	62.4	.....	...	24,612,000	19.3	128,000,000
1977	20,043,000	16.0	77,408,000	61.8	.....	...	27,882,000	22.2	125,333,000
1978	21,310,000	15.5	83,484,000	61.0	.....	...	32,287,000	23.5	137,031,000
1979	19,158,000	14.0	83,256,000	61.0	.....	...	33,927,000	23.0	136,341,000
1980	13,054,000	11.7	67,615,000	60.4	.....	...	31,166,000	27.9	111,835,000
1981	13,452,000	11.1	73,231,000	60.6	.....	...	34,145,000	28.3	120,828,000
1982	6,110,000	8.[illegible]	45,309,000	60.7	.....	...	23,158,000	31.1	74,577,000
1983	5,951,000	7.0	52,050,000	61.5	.....	...	26,615,000	31.5	84,615,000
1984	8,336,000	9.0	52,822,000	57.1	.....	...	31,369,000	33.9	91,131,000
1985	6,428,000	7.3	51,885,000	58.8	.....	...	29,946,000	33.9	88,259,000
1986	3,939,000	4.9	47,600,000	59.2	.....	...	28,866,000	35.9	80,405,000
1987‡‡	.....	...	58,250,000	66.0	.....	...	30,130,000	33.0	88,380,000

*Steel in first solid state after melting suitable for further processing or sale, including ingots, steel castings and strand or pressure cast blooms, billets, slabs, or other product forms. **Included in basic oxygen process in 1987. ***Included in openhearth since 1966. ‡ Includes small tonnages of crucible steel.

‡‡ IRON AGE estimate.

Source: AISI

STEEL PRICES

Iron Age Finished Steel Composite Price

	1978	1979	1980	1981	1982
Jan.	16.294	19.549	20.943	22.901	25.195
Feb.	17.324	19.549	21.038	23.362	25.195
March	17.393	19.549	21.168	23.598	25.195
April	17.670	19.606	21.739	23.776	25.297
May	17.670	19.637	21.739	23.776	25.297
June	17.670	19.668	21.739	24.232	25.297
July	17.670	20.253	21.736	24.488	25.297
Aug.	18.719	20.311	21.736	24.488	25.297
Sept.	18.719	20.311	21.736	24.488	25.297
Oct.	18.719	20.547	21.982	25.195	25.297
Nov.	18.719	20.547	22.019	25.195	25.297
Dec.	18.719	20.547	22.286	25.195	25.297
Avg.	17.940	20.006	21.655	24.224	25.271

	1983	1984	1985	1986	1987
Jan.	25.297	26.822	27.582	24.607	25.236
Feb.	25.987	26.939	27.582	24.607	25.236
March	26.217	26.939	27.582	24.607	25.236
April	26.217	26.939	27.582	24.607	25.236
May	26.217	27.405	27.582	24.709	25.236
June	26.217	27.405	27.582	24.850	25.236
July	26.217	27.582	27.582	24.850	25.236
Aug.	26.217	27.582	27.582	24.854	24.804
Sept.	26.822	27.582	27.582	24.951	24.804
Oct.	26.822	27.582	27.582	24.951	26.002
Nov.	26.822	27.582	27.582	24.951	26.002
Dec.	26.822	27.582	27.582	24.951	26.002
Avg.	26.323	27.313	27.582	24.792	25.356

Composite Price by Periods

Period —	Cents per Pound
June 28, 1977 to Sept. 5, 1978	16.941
Sept. 6, 1977 to Jan. 30, 1978	16.043
Jan. 31, 1978 to Feb. 27, 1978	17.301
Feb. 28, 1978 to April 3, 1978	17.393
April 4, 1978 to April 17, 1978	17.672
April 18, 1978 to July 31, 1978	17.670
Aug. 1 1978 to Dec 31, 1978	18.719
Jan. 1, 1979 to Mar. 31, 1979	19.549
April 1, 1979 to May 12, 1979	19.606
May 13, 1979 to June 30, 1979	19.668
July 1, 1979 to July 8, 1979	20.095
July 9, 1979 to Sept. 30, 1979	20.311
Oct. 1, 1979 to Jan. 6, 1980	20.547
Jan 7, 1980 to Mar. 1, 1980	21.038
Mar. 2, 1980 to Mar. 9, 1980	21.130
Mar 10, 1980 to Mar. 31, 1980	21.180
Apr. 1, 1980 to July 6, 1980	21.739
July 7, 1980 to Oct. 4, 1980	21.736
Oct. 5, 1980 to Nov. 30, 1980	22.019
Dec. 1, 1980 to Dec. 31, 1980	22.286
Jan. 1, 1981 to Feb. 1, 1981	22.901
Feb. 2, 1981 to Feb. 28, 1981	23.362
Mar. 1, 1981 to Mar. 28, 1981	23.598
Mar. 29, 1981 to June 20, 1981	23.776
June 21, 1981 to Sept. 26, 1981	24.488
Sept. 27, 1981 to April 3, 1982	25.195
April 4, 1982 to Feb. 5, 1983	25.297
Feb. 6, 1983 to Feb. 13, 1983	25.954
Feb. 14, 1983 to Aug. 31, 1983	26.217
Sept. 1, 1983 to Feb. 12, 1984	26.822
Feb. 13, 1984 to May 13, 1984	26.939
May 14, 1984 to June 30, 1984	27.405
July 1, 1984 to Dec. 31, 1985	27.582
Jan. 1, 1986 to May 18, 1986	24.607
May 19, 1986 to Aug. 30, 1986	24.850
Aug. 31, 1986 to Jan. 3, 1987	24.951
Jan. 4, 1987 to Aug. 1, 1987	25.236
Aug. 2, 1987 to Oct. 3, 1987	24.804
Oct. 4, 1987 to Dec. 31, 1987	26.002

STATISTICAL REVIEW

Cold-Rolled Sheets
At Pittsburgh, Cents Per Pound

	1982	1983	1984	1985	1986	1987
Jan.	24.65	24.65	28.15	28.15	25.15	26.90
Feb.	24.65	26.15	28.15	28.15	25.15	26.90
Mar.	24.65	26.15	28.15	28.15	25.15	26.90
Apr.	24.65	26.15	28.15	28.15	25.15	26.90
May	24.65	26.15	28.15	28.15	25.90	26.90
June	24.65	26.15	28.15	28.15	25.90	26.90
July	24.65	26.15	28.15	28.15	25.90	26.90
Aug.	24.65	26.15	28.15	28.15	25.90	27.90
Sept.	24.65	28.15	28.15	28.15	25.90	27.90
Oct.	24.65	28.15	28.15	28.15	25.90	28.15
Nov.	24.65	28.15	28.15	28.15	25.90	28.15
Dec.	24.65	28.15	28.15	28.15	25.90	28.15
Average	24.65	26.69	28.15	28.15	25.65	27.38

Hot-Rolled Sheets
At Pittsburgh, Cents Per Pound

	1982	1983	1984	1985	1986	1987
Jan.	20.80	20.80	23.75	23.75	20.75	22.10
Feb.	20.80	22.05	23.75	23.75	20.75	22.10
Mar.	20.80	22.05	23.75	23.75	20.75	22.10
Apr.	20.80	22.05	23.75	23.75	20.75	22.10
May	20.80	22.05	23.75	23.75	21.35	22.10
June	20.80	22.05	23.75	23.75	21.35	22.10
July	20.80	22.05	23.75	23.75	21.35	22.10
Aug.	20.80	22.05	23.75	23.75	21.35	20.25
Sept.	20.80	23.75	23.75	23.75	21.35	20.25
Oct.	20.80	23.75	23.75	23.75	21.35	21.50
Nov.	20.80	23.75	23.75	23.75	21.35	21.50
Dec.	20.80	23.75	23.75	23.75	21.35	21.50
Average	20.80	22.51	23.75	23.75	21.15	21.64

Tinplate
Single Reduced, 70 lb.
Dollars Per Base Box, Pittsburgh

	1982	1983	1984	1985	1986	1987
Jan.	26.29	26.29	27.74	27.74	30.12	30.12
Feb.	26.29	26.29	27.74	28.99	30.12	30.12
Mar.	26.29	26.29	27.74	28.99	30.12	30.12
Apr.	26.29	26.29	27.74	28.99	30.12	30.12
May	26.29	26.29	27.74	28.99	30.12	30.12
June	26.29	26.29	27.74	28.99	30.12	30.12
July	26.29	26.29	27.74	28.99	30.12	30.12
Aug.	26.29	26.29	27.74	28.99	30.12	30.12
Sept.	26.29	27.74	27.74	28.99	30.12	30.12
Oct.	26.29	27.74	27.74	30.12	30.12	31.38
Nov.	26.29	27.74	27.74	30.12	30.12	31.38
Dec.	26.29	27.74	27.74	30.12	30.12	31.38
Average	26.29	26.77	27.74	29.17	30.12	30.54

Galvanized Sheets*
At Pittsburgh, Cents Per Pound

	1982	1983	1984	1985	1986	1987
Jan.	26.25	26.25	30.30	30.30	30.30	30.30
Feb.	26.25	28.00	30.30	30.30	30.30	30.30
Mar.	26.25	28.00	30.30	30.30	30.30	30.30
Apr.	26.25	28.00	30.30	30.30	30.30	30.30
May	26.25	28.00	30.30	30.30	30.30	30.30
June	26.25	28.00	30.30	30.30	30.30	30.30
July	26.25	28.00	30.30	30.30	30.30	30.30
Aug.	26.25	28.00	30.30	30.30	30.30	30.30
Sept.	26.25	30.30	30.30	30.30	30.30	30.30
Oct.	26.25	30.30	30.30	30.30	30.30	31.05
Nov.	26.25	30.30	30.30	30.30	30.30	31.05
Dec.	26.25	30.30	30.30	30.30	30.30	31.05
Average	26.25	28.62	30.30	30.30	30.30	30.65

*Hot-Dipped, 10 ga.

Structural Steel Shapes
At Pittsburgh, Cents Per Pound

	1982	1983	1984	1985	1986	1987
Jan.	22.90	23.90	23.90	23.90	23.90	23.90
Feb.	22.90	23.90	23.90	23.90	23.90	23.90
Mar.	22.90	23.90	23.90	23.90	23.90	23.90
Apr.	23.90	23.90	23.90	23.90	23.90	23.90
May	23.90	23.90	23.90	23.90	23.90	23.90
June	23.90	23.90	23.90	23.90	23.90	23.90
July	23.90	23.90	23.90	23.90	23.90	23.90
Aug.	23.90	23.90	23.90	23.90	23.90	23.90
Sept.	23.90	23.90	23.90	23.90	23.90	23.90
Oct.	23.90	23.90	23.90	23.90	23.90	23.90
Nov.	23.90	23.90	23.90	23.90	23.90	23.90
Dec.	23.90	23.90	23.90	23.90	23.90	23.90
Average	23.65	23.90	23.90	23.90	23.90	23.90

Steel Plates
At Pittsburgh, Cents Per Pound

	1982	1983	1984	1985	1986	1987
Jan.	24.25	24.25	25.75	25.75	18.25	19.00
Feb.	24.25	25.75	25.75	25.75	18.25	19.00
Mar.	24.25	25.75	25.75	25.75	18.25	19.00
Apr.	24.25	25.75	25.75	25.75	18.25	19.00
May	24.25	25.75	25.75	25.75	18.25	19.00
June	24.25	25.75	25.75	25.75	18.25	19.00
July	24.25	25.75	25.75	25.75	18.25	19.00
Aug.	24.25	25.75	25.75	25.75	18.25	20.25
Sept.	24.25	25.75	25.75	25.75	19.00	20.25
Oct.	24.25	25.75	25.75	25.75	19.00	21.25
Nov.	24.25	25.75	25.75	25.75	19.00	21.25
Dec.	24.25	25.75	25.75	25.75	19.00	21.25
Average	24.25	25.63	25.75	25.75	18.50	19.77

Special Quality Bars
At Pittsburgh, Cents Per Pound

	1982	1983	1984	1985	1986	1987
Jan.	23.95	23.95	25.80	27.05	26.78	26.78
Feb.	23.95	25.80	25.80	27.05	26.78	26.78
Mar.	23.95	25.80	25.80	27.05	26.78	26.78
Apr.	23.95	25.80	25.80	27.05	26.78	26.78
May	23.95	25.80	25.80	27.05	26.78	26.78
June	23.95	25.80	25.80	27.05	26.78	26.78
July	23.95	25.80	27.05	27.05	26.78	26.78
Aug.	23.95	25.80	27.05	27.05	26.78	26.78
Sept.	23.95	25.80	27.05	27.05	26.78	26.78
Oct.	23.95	25.80	27.05	27.05	26.78	26.78
Nov.	23.95	25.80	27.05	27.05	26.78	26.78
Dec.	23.95	25.80	27.05	27.05	26.78	26.78
Average	23.95	25.65	26.43	27.05	26.78	26.78

Composite Pig Iron Price
Average of Iron Age quotes on basic and foundry pig iron per net ton

	1982	1983	1984	1985	1986	1987
Jan.	$213.00	$213.00	$213.00	$213.00	$213.00	$213.00
Feb.	213.00	213.00	213.00	213.00	213.00	213.00
Mar.	213.00	213.00	213.00	213.00	213.00	213.00
Apr.	213.00	213.00	213.00	213.00	213.00	213.00
May	213.00	213.00	213.00	213.00	213.00	213.00
June	213.00	213.00	213.00	213.00	213.00	213.00
July	213.00	213.00	213.00	213.00	213.00	213.00
Aug.	213.00	213.00	213.00	213.00	213.00	213.00
Sept.	213.00	213.00	213.00	213.00	213.00	213.00
Oct.	213.00	213.00	213.00	213.00	213.00	213.00
Nov.	213.00	213.00	213.00	213.00	213.00	213.00
Dec.	213.00	213.00	213.00	213.00	213.00	213.00
Average	$213.00	$213.00	$213.00	$213.00	$213.00	$213.00

SCRAP COMPOSITES
Average of Iron Age Scrap Prices Pittsburgh
Chicago, Philadelphia, Per Gross Ton
No. 1 Heavy Melt

	1982	1983	1984	1985	1986	1987
Jan.	$84.34	$61.30	$92.70	$81.00	$73.34	$76.00
Feb.	82.17	70.00	94.92	83.15	75.50	77.09
Mar.	76.83	73.09	91.25	86.75	73.57	74.56
Apr.	71.33	71.00	90.17	78.70	72.41	73.17
May	62.67	67.70	89.08	70.50	71.50	75.08
June	58.03	70.84	85.17	66.34	70.90	77.30
July	56.00	71.75	81.90	68.97	71.83	79.58
Aug.	55.69	75.04	82.25	74.17	75.10	84.57
Sept.	56.17	77.17	85.00	72.43	74.17	94.08
Oct.	52.92	77.97	82.90	71.17	73.17	108.92
Nov.	51.23	81.42	79.09	68.83	74.17	101.83
Dec.	52.59	87.25	79.03	70.23	74.24	99.83*
Average	63.35	73.71	86.12	74.35	73.33	85.17*

No. 2 Bundles

	1982	1983	1984	1985	1986	1987
Jan.	$56.50	$42.84	$59.96	$53.00	$52.83	$51.42
Feb.	56.17	48.84	62.50	55.25	53.83	51.17
Mar.	51.23	51.84	62.41	57.50	53.56	50.37
Apr.	47.58	48.84	61.03	55.24	53.08	49.83
May	44.83	46.57	60.16	49.51	52.17	51.09
June	42.83	46.34	56.50	47.17	51.77	52.70
July	41.83	45.75	51.10	50.04	52.50	54.17
Aug.	41.83	45.50	51.16	53.83	53.70	54.03
Sept.	41.47	45.50	51.83	53.04	51.67	60.75
Oct.	39.42	46.57	51.16	52.25	50.50	71.83
Nov.	38.70	49.34	51.09	50.67	50.50	59.77
Dec.	38.75	56.91	51.10	50.50	50.50	65.83*
Average	45.07	48.15	55.84	52.34	52.22	56.91*

*Estimate

Pittsburgh
Prices of No. 1 Heavy Melt, per Gross Ton

	1982	1983	1984	1985	1986	1987
Jan.	$94.50	$63.90	$98.30	$83.50	$73.50	$79.50
Feb.	91.50	73.25	103.25	88.00	76.50	82.00
Mar.	85.90	78.25	100.50	92.50	73.50	79.10
Apr.	75.50	75.50	100.50	81.50	73.25	76.50
May	64.50	69.10	99.75	73.00	70.50	79.50
June	61.50	72.50	94.50	70.50	69.70	82.50
July	59.00	74.50	88.10	73.50	71.75	85.50
Aug.	57.50	79.70	87.25	77.50	76.30	90.70
Sept.	57.50	82.50	92.00	75.10	76.50	98.75
Oct.	55.25	82.90	87.70	73.50	76.50	115.50
Nov.	52.50	85.50	81.00	69.50	78.50	113.90
Dec.	53.75	92.00	80.70	71.10	79.50	107.50*
Average	67.41	77.46	92.80	77.43	74.67	90.91*

No. 2 Bundles

	1981	1982	1983	1984	1985	1986
Jan.	$60.60	$43.10	$59.50	$50.50	$49.50	$45.50
Feb.	62.50	50.75	59.50	55.00	49.50	45.50
Mar.	53.70	54.50	59.50	56.50	49.50	45.50
Apr.	48.75	51.50	59.50	56.50	46.50	45.50
May	46.50	51.50	59.50	56.50	46.50	48.50
June	44.50	51.50	59.50	50.50	46.50	48.50
July	44.50	51.50	54.30	52.90	46.50	50.50
Aug.	44.50	51.50	53.50	54.50	46.50	51.70
Sept.	42.50	51.50	53.50	54.50	46.00	59.25
Oct.	40.25	51.50	53.10	54.50	45.50	64.50
Nov.	38.10	52.75	52.50	50.50	45.50	63.50
Dec.	37.50	59.50	50.50	49.50	45.50	59.50*
Average	46.98	51.75	56.20	53.49	47.00	52.33*

*Estimate

STATISTICAL REVIEW

Chicago
Prices of No. 1 Heavy Melt, Per Gross Ton

	1982	1983	1984	1985	1986	1987
Jan.	$83.25	$62.70	$92.10	$80.50	$74.50	$78.50
Feb.	79.50	74.25	90.50	80.50	77.50	78.50
Mar.	71.70	77.50	87.50	85.50	74.50	74.10
Apr.	67.00	72.50	85.50	77.90	74.50	72.50
May	58.50	68.30	85.50	68.50	72.50	76.25
June	52.30	71.50	80.50	61.50	71.50	77.50
July	49.50	72.25	77.50	63.10	71.50	79.50
Aug.	50.70	76.90	78.50	72.50	75.50	84.50
Sept.	51.50	79.50	81.50	72.30	73.50	97.50
Oct.	46.50	79.50	80.90	71.75	71.50	116.50
Nov.	46.50	80.75	80.50	69.50	72.50	114.50
Dec.	49.50	84.75	80.50	70.10	72.50	100.50*
Average	58.87	75.03	83.42	72.81	73.50	87.53*

No. 2 Bundles

	1982	1983	1984	1985	1986	1987
Jan.	$65.50	$44.90	$60.70	$59.00	$60.50	62.50
Feb.	62.50	50.75	64.00	59.50	63.50	62.50
Mar.	56.50	54.50	64.50	64.50	60.30	60.50
Apr.	52.50	49.50	64.50	61.50	59.50	60.50
May	47.50	44.50	64.50	62.38	58.50	61.25
June	43.90	44.50	59.50	49.50	56.50	66.10
July	41.50	44.50	49.50	51.90	56.50	68.50
Aug.	41.50	44.50	49.50	61.50	60.50	66.50
Sept.	41.50	44.50	51.50	61.10	57.50	73.50
Oct.	38.50	44.50	51.50	58.75	55.50	88.50
Nov.	38.50	45.75	53.75	56.50	57.50	86.50
Dec.	39.25	56.25	56.30	56.90	57.50	79.50*
Average	47.43	47.38	57.48	54.59	58.65	69.70*

*Estimate

Philadelphia
Prices of No. 1 Heavy Melt, Per Gross Ton

	1982	1983	1984	1985	1986	1987
Jan.	$75.25	$57.50	$90.30	$79.00	$72.50	$70.00
Feb.	75.50	62.50	91.00	81.00	72.50	70.75
Mar.	72.90	63.50	85.75	82.25	72.70	70.50
Apr.	71.50	65.00	84.50	76.90	72.50	70.50
May	65.00	65.70	82.00	70.00	71.50	69.50
June	60.30	68.50	80.50	67.00	71.50	71.90
July	59.50	68.50	80.50	70.30	72.25	73.75
Aug.	59.50	65.50	81.00	72.50	73.50	78.50
Sept.	59.50	69.50	81.50	69.90	72.50	86.00
Oct.	57.00	71.50	80.10	68.25	71.50	94.75
Nov.	54.70	78.00	75.75	67.50	71.50	95.50
Dec.	54.50	85.00	75.90	69.50	71.50	91.50*
Average	63.76	68.64	82.40	72.84	72.16	78.60*

No. 2 Bundles

	1982	1983	1984	1985	1986	1987
Jan.	$43.50	$40.50	$59.70	$49.50	$48.50	$46.25
Feb.	43.50	45.00	64.00	51.25	48.50	45.50
Mar.	43.50	46.50	63.25	51.50	50.90	45.10
Apr.	41.50	45.50	59.10	47.70	53.25	43.50
May	40.50	43.70	56.50	42.00	51.50	43.50
June	40.10	43.00	50.50	41.50	52.30	43.50
July	39.50	41.25	49.50	45.30	54.50	43.50
Aug.	39.50	40.50	50.50	45.50	54.10	43.90
Sept.	39.50	40.50	50.50	43.50	51.50	49.50
Oct.	39.50	43.70	48.90	43.50	50.50	62.50
Nov.	39.50	49.50	47.00	45.00	48.50	59.30
Dec.	39.80	55.00	46.50	45.50	48.50	58.50*
Average	40.80	44.55	53.83	45.98	51.05	$48.71*

*Estimate

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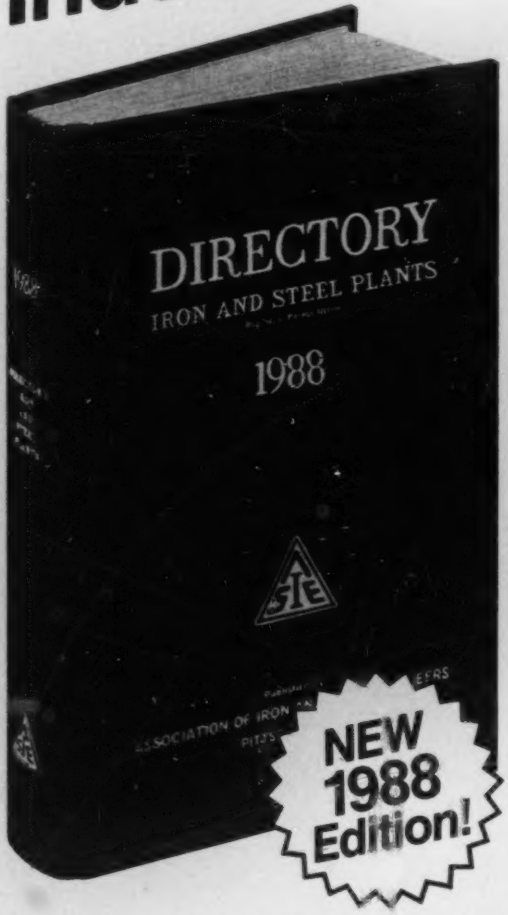

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IRON AGE

THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

A Fairchild Business Publication

FEBRUARY 1988

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HORIZONTAL CASTING FACES A BIG TEST

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IRON AGE
THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

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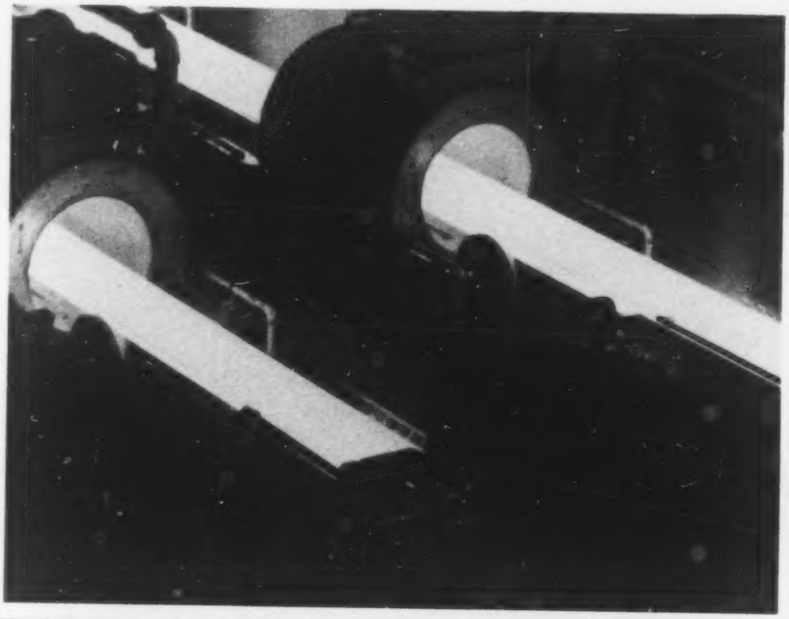

Steel billets pass through electromagnetic stirrers of a Horicast caster at C3F.

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MATERIALS PRICES

PRICE & PRODUCTION DATA

(Effective January 4, 1988)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	218	178	239	131
Pittsburgh	196	197	184	180
Youngstown	115	110	120	105
Lake Erie	154	131	151	105
Detroit	137	139	137	150
Chicago	494	504	520	335
Midwest	183	182	189	159
Southern	195	190	200	144
Western	55	54	58	40
U.S. Production	1,747	1,685	1,798	1,349

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium

Pellets (per iron unit natural)	gross-ton 58.0*
Pellets (per iron unit natural)	gross-ton 59.4**
Pellets (per iron unit natural)	gross-ton 72.45-86.9***
Mesabi, regular-unscreened	gross-ton 32.53
Mesabi, non-bessemer	gross-ton 30.03-31.53

*58.0¢—Mineral Services, Inc. as of 8/13/85. **59.4¢—Inland Steel Mining, 1/1/85 and Pickands Mather, 8/1/85, delivered hold of vessel, upper Lake ports. ***72.45¢—Cleveland-Cliffs as of 12/30/86. 72.5¢—U.S. Steel as of 8/16/85. 86.9¢—Oglebay Norton 3/25/82, Hanna Mining 2/26/82

STEEL PRODUCTION, COMPOSITE PRICES

(Effective January 4, 1988)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1988	To Date 1987
Net tons, in thousands	1,747	1,685	N.A.	N.A.
Capability Utilization Rate	80.9	78.0	N.A.	N.A.

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 1/3/88)	24.223	26.002	26.002	25.236
Pig Iron** (Net ton=2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 97.83	$ 99.17	$ 99.83	$ 76.50
No. 2 bundles	$ 65.50	$ 65.83	$ 65.83	$ 52.17

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 103.50	$108.50	$ 107.50	$ 79.50
No. 1 steel, Philadelphia	88.50	88.50	91.50	71.50
No. 1 steel, Chicago	101.50	100.50	100.50	78.50
No. 1 bundles, Detroit	106.50	111.50	111.50	80.50
Low Phos., Youngstown	105.50	108.50	108.50	79.50
No. 1 mach'y cast., Pgh	92.50	92.50	92.50	74.50
No. 1 mach'y cast., Phila	101.50	101.50	101.50	93.50
No. 1 mach'y cast., Chi	115.50	115.50	115.50	101.50

*Finished Steel Composite: Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective January 4, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	85.70	83.00	1/4/88
Copper (C)	150.00	142.00	12/31/87
Lead	38.00	42.00	1/4/88
Magnesium Ingot	153.00	148.00	12/9/85
Nickel (LME)	398.00	396.00	1/4/88
Zinc	45.00	43.00	11/16/87

ALUMINUM: Avg. for last week & previous week. COPPER (C)=cathode. LEAD: common grade. MAGNESIUM: 99.8% pig delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$248.00
Beryllium-copper, per lb. cont. Be	$152.00
Beryllium 97% powder 200	$196.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz.	$480.50
Indium, per troy oz.	$9.95
Iridium, per troy oz.	$345.00
Magnesium sticks, 10,000 lbs.	$2.12
Mercury, per 76-lb., f.o.b. N.Y.	$348.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz.	$122.00
Platinum, per troy oz.	$499.00
Rhodium, per troy oz.	$1,250.00
Silver ingots, per troy oz.	$6.52
Titanium sponge, melt grade	$4.00
Tungsten powder, hyd red.	$9.53-9.85
Vanadium	$6.00
Zirconium sponge	$11.20-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

Dec. 28—310.00
Dec. 29—311.00
Dec. 30—309.00
Dec. 31—N.A.
Jan. 1—Holiday

Scrap Prices
Brass Mill Scrap

(Cents per lb.; over 20,000 lbs. add 1¢ per lb.)

	Solids	**Turnings**
Copper	82	77
Yellow brass	71½	70½
Red brass	69½	65½
Comm. bronze	70	65
Mang. bronze	53	52
Free cutting rod ends	64½	63½

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	81
No. 2 copper wire	72
Light copper	66

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	74
No. 2 copper wire	65
Light copper	58
No. 1 composition	59
No. 1 comp. turnings	59
Hvy. yellow brass solids	45
Hvy. yellow brass turnings	39
Radiators	41

Aluminum	
New mixed clips	56 — 57
Old sheet	50 — 51
Old cast	50 — 51
Clean dry borings	50 — 51

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	50 — 51
Mixed L.C. clips	49 — 50
Old sheets and cast	43 — 44
Borings and turnings	38 — 39
Duraluminum clippings	43 — 44

Copper and Brass

No. 1 copper wire	65 — 69
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Nickel

Nickel solids	165 —175
Nickel rod ends	168 —178
Nickel sheets, clips	168 —178
Nickel turnings	54 — 64

Zinc

New zinc clippings	16 — 17
Old diecast zinc	12 — 13

MATERIALS PRICES

EFFECTIVE JANUARY 4, 1988

(Effective January 4, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of Iron Age editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 103.00 to	$ 104.00
No. 2 hvy. melting	93.00 to	94.00
No. 1 dealer bundles	139.00 to	140.00
No. 1 factory bundles (auto)	140.00 to	141.00
No. 2 bundles	59.00 to	60.00
No. 1 busheling	137.00 to	138.00
Machine shop turnings	13.00 to	14.00
Shoveling turnings	49.00 to	50.00
Cast iron borings	46.00 to	47.00
Low phos. punchings plate	136.00 to	137.00
Heavy turnings	94.00 to	95.00
No. 1 RR hvy. melting	124.00 to	125.00
Rails, 2 ft. and under	154.00 to	155.00
Scrap rails, random lgth	129.00 to	130.00
RR specialties	140.00 to	141.00
No. 1 machinery cast	92.00 to	93.00
Cupola cast	84.00 to	85.00
Heavy breakable cast	30.00 to	31.00
Stainless		
18-8 bundles and solids	710.00 to	725.00
18-8 turnings	610.00 to	625.00

Chicago

No. 1 hvy. melting	$ 101.00 to	$ 102.00
No. 2 hvy. melting	97.00 to	98.00
No. 1 dealer bundles	126.00 to	127.00
No. 1 factory bundles (auto)	119.00 to	120.00
No. 2 dealer bundles	78.00 to	79.00
No. 1 busheling	119.00 to	120.00
Shredder scrap	114.00 to	115.00
Machine shop turnings	40.00 to	41.00
Mixed borings and turnings	32.00 to	33.00
Shoveling turnings	49.00 to	50.00
Cast iron borings	54.00 to	55.00
Low phos. forge crop	144.00 to	145.00
Low phos. punchings plate 1/4 in. and heavier	160.00 to	161.00
Low phos. 2 ft. and under	155.00 to	156.00
No. 1 RR hvy. melting	107.00 to	108.00
Scrap rails random lgth	125.00 to	126.00
Reroller rails	139.00 to	140.00
Rails, 2 ft. and under	145.00 to	146.00
RR couplers and knuckles	124.00 to	125.00
RR car axles	164.00 to	165.00
No. 1 machinery cast	115.00 to	116.00
Cupola cast	104.00 to	105.00
Stove plate	114.00 to	115.00
Steel car wheels	135.00 to	136.00
Stainless		
18-8 bundles and solids	725.00 to	735.00
18-8 turnings	565.00 to	575.00
430 bundles and solids	175.00 to	185.00
430 turnings	90.00 to	100.00

Philadelphia

No. 1 hvy. melting	$ 87.00 to	$ 90.00
No. 2 hvy. melting	77.00 to	80.00
No. 1 dealer bundles	123.00 to	126.00
No. 2 dealer bundles	57.00 to	60.00
No. 1 busheling	114.00 to	117.00
Shredder scrap	115.00 to	118.00
Machine shop turnings	26.00 to	29.00
Mixed borings and turnings	26.00 to	29.00
Shoveling turnings	43.00 to	46.00
Low phos. 5 ft. and under	108.00 to	111.00
Low phos. 2 ft. punchings	135.00 to	138.00
Electric furnace bundles	127.00 to	130.00
RR specialties	108.00 to	111.00
Rails, 2 ft. and under	139.00 to	142.00
Cupola cast	94.00 to	97.00
Heavy breakable cast	52.00 to	55.00
No. 1 machinery cast	100.00 to	103.00

Detroit

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 66.00 to	$ 67.00
No. 2 hvy. melting	64.00 to	65.00
No. 1 dealer bundles	106.00 to	107.00
No. 2 bundles	49.00 to	50.00
No. 1 busheling	104.00 to	105.00
Drop forge flashings	64.00 to	65.00
Machine shop turnings	40.00 to	[illegible]
Mixed borings and turnings	15.00 to	16.00
Shoveling turnings	40.00 to	41.00
Cast iron borings	38.00 to	39.00
Heavy breakable cast	40.00 to	41.00
Mixed cupola cast	57.00 to	58.00
Automobile cast	79.00 to	80.00
Stainless		
18-8 bundles and solids	725.00 to	735.00
18-8 turnings	390.00 to	400.00
430 bundles and solids	145.00 to	155.00

Youngstown

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 84.00 to	$ 85.00
No. 2 hvy. melting	78.00 to	79.00
No. 1 dealer bundles	121.00 to	122.00
No. 2 dealer bundles	48.00 to	49.00
Machine shop turnings	24.00 to	25.00
Shoveling turnings	24.00 to	25.00
Low phos. plate	105.00 to	106.00
Electric furnace bundles	101.00 to	102.00
Galvanized bundles	98.00 to	99.00

Cleveland

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 79.00 to	$ 80.00
No. 2 hvy. melting	73.00 to	74.00
No. 1 dealer bundles	121.00 to	122.00
No. 1 factory bundles	125.00 to	126.00
No. 2 bundles	44.00 to	45.00
No. 1 busheling	116.00 to	117.00
Machine shop turnings	29.00 to	30.00
Shoveling turnings	29.00 to	30.00
Cast iron borings	29.00 to	30.00
Cut structural & plates, 5 ft. and under	94.00 to	95.00
Cut structural & plates, 2 ft. and under	117.00 to	118.00
Low phos. punchings plate	120.00 to	121.00
Foundry steel, 2 ft. & under	74.00 to	75.00
No. 1 RR hvy. melting	84.00 to	85.00
Rails, 2 ft. and under	116.00 to	117.00
Rails, 18 in. and under	118.00 to	119.00
No. 1 machinery cast	79.00 to	80.00
Mixed cast	46.00 to	47.00
Stainless		
18-8 bundles	730.00 to	740.00
18-8 turnings	395.00 to	405.00
430 bundles	150.00 to	160.00

Buffalo

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 80.00 to	$ 81.00
No. 2 hvy. melting	70.00 to	71.00
No. 1 busheling	117.00 to	118.00
No. 1 dealer bundles	117.00 to	118.00
No. 2 bundles	41.00 to	42.00
Machine shop turnings	18.00 to	19.00
Mixed borings and turnings	18.00 to	19.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	29.00 to	30.00
Low phos. plate	112.00 to	113.00
Structural and plate, 2 ft. and under	116.00 to	117.00
Rails, 2 ft. and under	129.00 to	130.00
Scrap rails, random lgth	104.00 to	105.00
No. 1 machinery cast	94.00 to	95.00
No. 1 cupola cast	77.00 to	78.00

St. Louis

No. 1 hvy. melting	$ 92.00 to	$ 93.00
No. 2 hvy. melting	83.00 to	84.00
No. 1 busheling	117.00 to	118.00
No. 1 dealer bundles	117.00 to	118.00
No. 2 bundles	78.00 to	79.00
Machine shop turnings	31.00 to	32.00
Shoveling turnings	35.00 to	36.00
Cast iron borings	41.00 to	42.00
No. 1 RR hvy. melting	102.00 to	103.00
Rails, random length	98.00 to	99.00
Rails, 5 ft. and under	114.00 to	115.00
Plate and structural, 5 ft. and under	102.00 to	103.00
Cupola cast	79.00 to	80.00
Heavy breakable cast	43.00 to	44.00
Stove plate	107.00 to	108.00
Steel car wheels	114.00 to	115.00
Rerolling rails	130.00 to	131.00
Unstripped motor blocks	60.00 to	61.00

Birmingham

No. 1 hvy. melting	$ 97.00 to	$ 98.00
No. 2 hvy. melting	90.00 to	91.00
No. 1 dealer bundles	104.00 to	105.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	102.00 to	103.00
Shredder scrap	111.00 to	112.00
Machine shop turnings	46.00 to	47.00
Shoveling turnings	56.00 to	57.00
Cast iron borings	38.00 to	39.00
Electric furnace bundles	85.00 to	86.00
Elec. furnace, 3 ft. & under	87.00 to	88.00
Structural and plate, 2 ft.	117.00 to	118.00
Structural and plate, 4 ft.	114.00 to	115.00
No. 1 RR hvy. melting	114.00 to	115.00
Scrap rails, random lgth	99.00 to	100.00
Rails, 2 ft. and under	119.00 to	120.00
Angles and splice bars	108.00 to	109.00
No. 1 cupola cast	92.00 to	93.00
Unstripped motor blocks	89.00 to	90.00

Cincinnati

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 85.00 to	$ 86.00
No. 2 hvy. melting	77.00 to	78.00
No. 1 dealer bundles	105.00 to	106.00
No. 2 bundles	46.00 to	47.00
No. 1 busheling	105.00 to	106.00
Machine shop turnings	25.00 to	26.00
Shoveling turnings	28.00 to	29.00
Cast iron borings	36.00 to	37.00
Low phos. 18 in. and under	113.00 to	114.00
Rails, random length	88.00 to	89.00
Rails, 2 ft. and under	117.00 to	118.00
No. 1 cupola cast	83.00 to	84.00
Heavy breakable cast	44.00 to	45.00
Drop broken cast	93.00 to	94.00

New York

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 59.00 to	$ 61.00
No. 2 hvy. melting	52.00 to	53.00
No. 2 dealer bundles	35.00 to	37.00
Mixed borings and turnings	10.00 to	11.00
Shoveling turnings	10.00 to	12.00
Clean cast, chem. borings	35.00 to	36.00
No. 1 machinery cast	79.00 to	80.00
Mixed yard cast	50.00 to	51.00
Heavy breakable cast	15.00 to	17.00
Stainless		
18-8 prepared solids	560.00 to	580.00
18-8 turnings	385.00 to	405.00
430 prepared solids	105.00 to	115.00
430 solids	100.00 to	110.00

Boston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 63.00 to	$ 65.00
No. 2 hvy. melting	53.00 to	55.00
No. 1 dealer bundles	88.00 to	90.00
No. 2 bundles	30.00 to	32.00
No. 1 busheling	83.00 to	85.00
Shredder scrap	78.00 to	80.00
Machine shop turnings	18.00 to	20.00
Shoveling turnings	23.00 to	25.00
No. 1 machinery cast	85.00 to	87.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	22.00 to	24.00

San Francisco

No. 1 hvy. melting	$ 60.00 to	$ 62.00
No. 2 hvy. melting	54.00 to	56.00
No. 1 dealer bundles	52.00 to	54.00
No. 2 dealer bundles	40.00 to	41.00
Machine shop turnings	15.00 to	16.00
Cast iron borings	15.00 to	16.00
No. 1 cupola cast	82.00 to	84.00

Los Angeles

No. 1 hvy. melting	$ 58.00 to	$ 60.00
No. 2 hvy. melting	52.00 to	54.00
No. 1 dealer bundles	50.00 to	52.00
No. 2 dealer bundles	37.00 to	39.00
Machine shop turnings	12.00 to	13.00
Shoveling turnings	13.00 to	14.00
Cast iron borings	13.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	70.00 to	72.00
No. 1 cupola cast	74.00 to	76.00

Seattle

No. 1 hvy. melting	$ 83.00 to	$ 84.00
No. 2 hvy. melting	75.00 to	76.00
No. 2 bundles	59.00 to	60.00
No. 1 cupola cast	89.00 to	90.00
Mixed yard cast	80.00 to	82.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 103.00
No. 2 hvy. melting, cut 2 ft. and under	90.00
No. 1 dealer bundles	111.00
No. 2 bundles	49.00
Mixed steel scrap	75.00
Bush. new fact. prep'd	104.00
Bush. new fact. unprep'd	89.00
Machine shop turnings	31.00
Short steel turnings	31.00
Mixed borings and turning	25.00
Cast scrap	102.00

Houston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 90.00 to	$ 91.00
No. 2 hvy. melting	80.00 to	81.00
No. 2 bundles	47.00 to	48.00
Machine shop turnings	32.00 to	33.00
Crushed turnings	42.00 to	43.00
Shredder scrap	102.00 to	103.00
Cut structural plate, 2 ft. and under	103.00 to	104.00
Cut structural plate, 5 ft. and under	94.00 to	95.00
Unstripped motor blocks	60.00 to	61.00
Cupola cast	95.00 to	96.00

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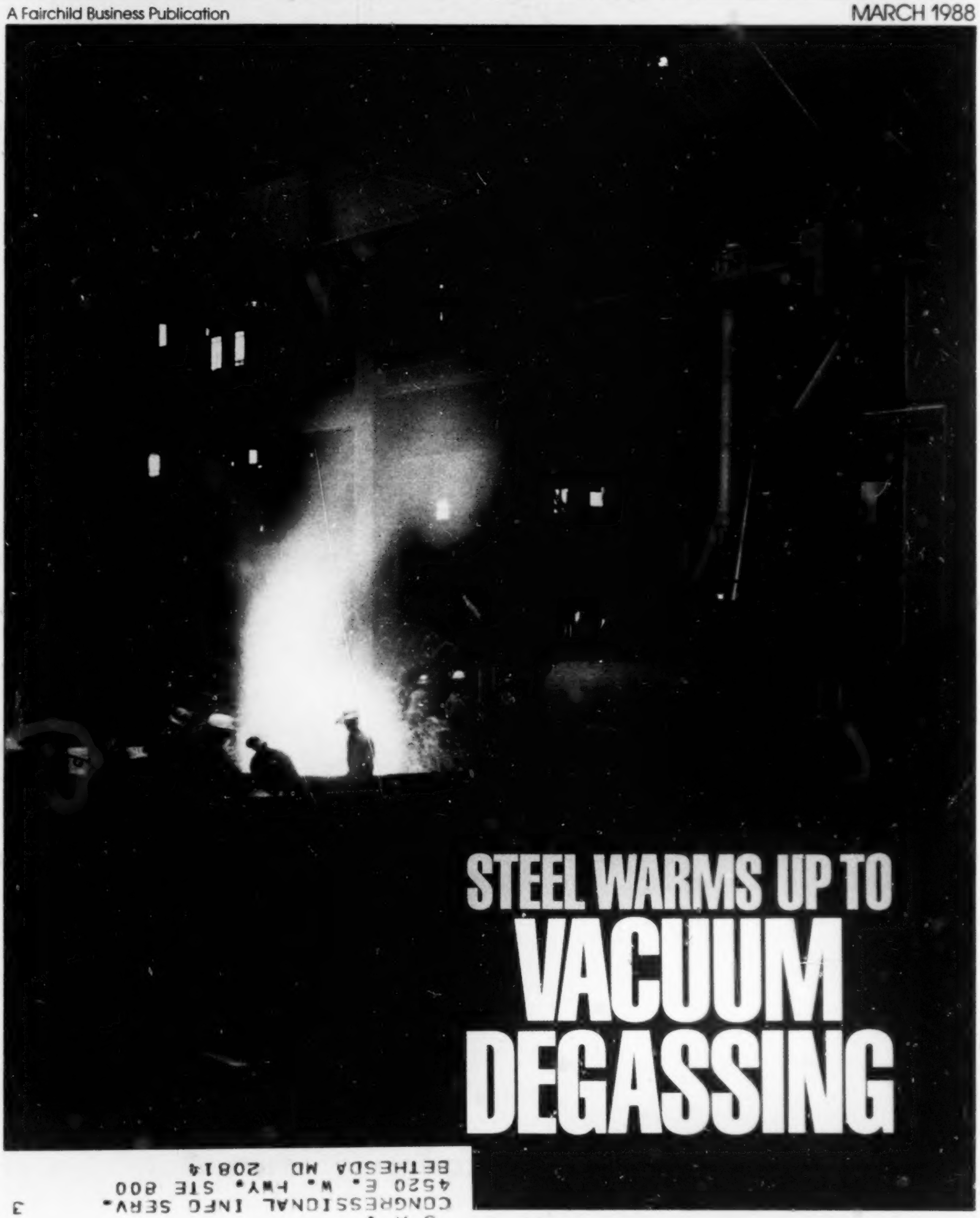

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THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

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Steel Shortage

I have just read George McManus' interesting report on IISI's annual conference in Washington, D.C. As always your coverage of our meetings is greatly appreciated. However, the title "Steel Shortage—What Happened to The World's Surplus?" *(Iron Age*, December 1987, p.14.) may give an excessively optimistic impression of prospects for the world steel industry.

Although all of us are happy with the current upturn in the U.S. and elsewhere, it is dangerous to confuse this temporary short term demand improvement with the underlying long term situation. As pointed out in Washington, the economic outlook is too uncertain to support an optimistic view of medium term steel demand. As for the supply, the consensus in the steel industry would suggest that capacity will be more than adequate. Indeed major industrialized countries such as the European Community and Japan are planning further difficult cutbacks.

It would be premature to conclude that the world steel surplus has disappeared.

Lenhard J. Holschuh
Secretary General
International Iron and Steel Institute
Brussels, Belgium

Correction

An article in the December issue of *Iron Age* ("Third Quarter Earnings—Back in The Black," p. 33) incorrectly referred to a Kaiser Aluminum & Chemical Co. plant in Ravenswood, Va. The plant is located in West Virginia.

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BPA

Steel rises to new heights with 'Stile,' a steel prepainted roofing tile marketed in the U.S. by Metal Sales Manufacturing Co.

ARE THERE NEW MARKETS FOR STEEL?

The industry's financial plight has left many steelmakers fighting to stay afloat, but a few are looking for new uses for their metal.

Roll it, can it, tie it, whatever your style is, it could mean profits for steelmakers.

The industry's five-year slump hopefully has ended, and steel companies are anxiously moving toward a new and better future.

For many that means directing their efforts at improving the quality of steel and ensuring their positions in traditional markets.

Others, though, are looking for new applications for steel products. And as the value of the dollar declines in foreign countries, several American steelmakers are ready to explore yet another "new" market—exports.

For the past five years steel has been down on its luck. And some have criticized the industry for being more worried about keeping its head above water, instead of trying to learn a new stroke.

But today with steel regaining momentum, steel companies are in a better position to focus on the future.

As one C.E.O. of a major steel company said about planning for the future: "People who really believe in innovation and progress may look back occasionally but they spend most of their time and energies moving ahead."

And many of the U.S steel companies are doing just that.

Choosing Steel

Today, even traditional steel markets like automobiles, are being invaded by other materials. And that threat is pushing steel companies to look toward new applications and improvements.

According to David Chalk, corporate vice president of research and technology at Armco, Inc., of Middletown, Ohio, protecting the current steel markets is one goal.

"We are spending a lot of our effort to make steel work better. It's a struggle just to stay even with the world when we're combating competition from new materials," he said.

The major users of steel—appliance, energy, aerospace, and automotive industries—are seeing new materials all the time, Mr. Chalk said, but Armco is working to keep them in steel.

"We're working to make steel the material of choice," he said. "We are always looking for new markets. It's a combination of improving existing applications and looking for new applications."

New Applications

But finding new applications for steel can sometimes be tough.

Dr. Kishen Koul, vice president and general manager of NATCO International, Philadelphia, feels that finding new markets is essential. And that not enough research is being done.

During a panel discussion at the Iron and Steel Society's Electric Furnace Conference in Chicago last December, Dr. Koul asked the panel members whether their companies were seeking new uses for steel. New markets, he added, are one of the keys to the survival of the American steel industry.

"Basically I told them that we were fighting in our backyard," recalled Dr. Koul.

Some of the areas for new markets he suggested included new steel structures on heavily traveled highways, like the freeways near Los Angeles and Route 1 in Princeton, N.J.

"If you look at those areas, the highways are just absolutely jammed, and there is no way to go but up," he said.

"I talked to some of the gentlemen afterwards, and I think they thought it was a good idea. But what they have to do is get together with builders and the state departments of transportation, and put some money into it."

Dr. Koul noted, ten years ago developments like line pipe and high strength steel spawned new markets that produced the demand for millions of tons of steel. "Today," he added, "there is nothing like that going on, nothing at all."

One reason for the lack of developments, Dr. Koul explained, could be attributed to the last five years of financial difficulties in the steel industry. "People are trying to survive now that the market has strengthened. They are trying to just make enough steel to meet the demand," he said.

But there are companies that have come up with a new application for steel in the U.S. By replacing materials like wood or ceramic, or noticing new uses foreign consumers are making of steel, these companies have experimented and applied steel in new areas.

Railroad Ties

One new application for steel has been developed for the railroads.

Nucor Corp. has taken an idea, employed first in France but now used throughout the world, and applied it to a product dominated by wood.

By replacing wooden railroad ties with steel and concrete ties, Nucor believes, the railroads could save time, money and manpower.

G. Wayne Studebaker, Nucor's general manager of research and development, claimed the combination steel and concrete ties could double the life expectancy of the track. Wooden ties have an average life of about 25 years.

The new ties are two pads of cement held together with an I-beam. Each tie weighs 400 lbs and contains about 105 lbs of steel. The tie is designed to replace a wood tie or a concrete tie which has a small amount of steel.

NEW MARKETS FOR STAINLESS STEEL

Potential Annual Demand by 1990 (in lbs)

Gas Furnaces	16,000,000
Washers and Dryers	15,000,000
Piping Systems for Nuclear Power Plants	8,000,000
Piping Systems for Offshore Drilling	12,000,000
Automotive	40,000,000

Source: Allegheny Ludlum

Nucor Chairman F. Kenneth Iverson said the tie is patented but had to be redesigned.

"We have a license to produce it from the inventor. Because of the different spacing and loads in the U.S., we had to redesign the tie so that it will carry the heavy loads that we haul," Mr. Iverson said.

The relative cost until this time has been in favor of wood, said Mr. Studebaker. "The railroads were generally strained for money and were limited in what they spent on maintenance and replacing ties.

"Right now, the initial investment is very close to even between the cost of new steel and concrete ties, and wooden ties," he noted.

The railroads and their maintenance crews were not receptive to steel and concrete ties, Mr. Studebaker said. Even after cost savings were demonstrated to them, he added, the railroads were still reluctant.

Nevertheless, a few railroads have installed the new ties.

According to Mr. Iverson, four years ago the first steel and concrete ties were used on a main switching line of the Illinois Gulf Railroad in Chicago, and some ties are being used on an experimental basis on the Southern Pacific Railroad in northern California.

"We also have similar ties on the Metroliner in Atlanta," Mr. Iverson added.

Steel vs. Aluminum

Weirton Steel Corp., of Weirton, W. Va., has developed a new steel can end, with hopes at putting a dent in the growing aluminum food can industry. Aluminum has captured 5 pct of the metal food can market in the last few years.

William T. Saunders, vice president of product development and research for Weirton, said the new can end "will go a long way toward keeping steel the principal choice in material for food cans."

The new easy open end is made of 85 lb base box tinplate, which has been continuously annealed of 85 lb base box tinplate, which has been continuously annealed and rolled to a T-4 Rockwell hardness. The new ring pull is 155 lb base box tinplate.

According to Harold L. Baker, manager of Weirton's marketing research administrative services, the new end will be much easier and safer for consumers. One advantage is the ring acts as a lever to lift the end up, said Mr. Baker.

"Easy-open ends on steel cans have been available for about 15 years, but none of them were any good," said Mr. Saunders. "At Weirtec, the R&D arm of Weirton, we spent about two years developing this product."

'You'll Like Our Stile'

Another application from overseas could create a brand new market for steel.

According to Tom Morris, regional vice president of Metal Sales Manufacturing Corp., Louisville, Ky., a producer of metal panels for the construction industry, the new application is a pre-painted steel roofing tile.

One of the company goals in marketing the 'Stile' steel roofing system, is getting steel, as opposed to clay tile, used for residential and multi-family applications.

The Stile tiles are formed from 26 gage galvanized steel and weigh 1 lb per sq ft. The tiles are manufactured under a license from a Swedish firm.

If steel hopes to excel in this new market, it must overcome some obstacles, mainly consumer reluctance. "It's just a question of getting past the idea that it's not tile, but just something that looks like tile," said Mr. Morris.

"The advantages they have are the same advantages we feel steel has, it's light weight, doesn't burn, doesn't rot, it's easy to use and lasts a long time," he said.

The company has actively marketed the product since 1982, though Mr. Morris admitted that it's been a slow process. "But," he added, "we're seeing our acceptance growing every year."

Workers install Nucor's new steel and concrete ties along a section of the Southern Pacific Railroad in northern California.

Mr. Morris emphasized that a real market potential for steel is in the development of a family of products priced more competitively with asphalt. Pre-painted steel parts like door jambs, headers and trim, could save time and money, he said.

"That market continues to develop more accessory items every year. The integrated steel companies are now just getting to the point where their bottom line profitability is such that they can begin to invest money in longer term marketing ventures," said Mr. Morris. "And when that happens, they will be able to get a much larger potential of the market."

Accu-Namel

Bethlehem Steel Corp., of Bethlehem, Pa., has also introduced a new product it hopes will become an alternative to another material.

Otto Ehrsam, market development engineer for Bethlehem, said the new product, designed to replace enameling iron, is a porcelain enameling steel sheet to be used in the appliance industry.

"We have been working on a cold-rolled steel that looks very much like enameling iron. We call it Accu-Namel," he said.

Accu-Namel is a low carbon steel produced on a continuous caster and heat treated on Bethlehem's Burns Harbor continuous heat treating line (CHTL Line).

Mr. Ehrsam emphasized that there's a stronger focus in higher quality steel.

"The appliance industry is extremely demanding in surface quality and shape of the material. After all, they're right there in front of the housewife to see all the time," Mr. Ehrsam said.

James C. Van Vliet, Bethlehem's vice president of marketing, said Accu-Namel has been "proven to provide excellent performance in forming and enameling appliance applications" compared to enameling iron.

"This is important to manufacturers," Mr. Van Vliet continued, "who find their source of enameling iron to be in decline due to its high production cost."

Enameling iron is an ingot-cast product, and according to Bethlehem, is a relatively high cost material. The new product is more cost-efficient.

"The ingot-cast material will probably go on its merry old way," predicted Mr. Ehrsam.

Accu-Namel has been used in a process known as no-pickle, no-nickle frits, (frits is ground glass that is fused or melted to the surface of the steel) which requires clean steel. The sheet is electrolytically clean, and even meets all the requirements of the automotive industry for smut-free steel.

"This is just perfect for these no-pickle, no-nickle frits. So we are right in tune with all the things that are developing in the enameling industry and the appliance industry," said Mr. Ehrsam.

Stainless Steel

For many specialty steelmakers new application research is big business.

(Cont. on p. 26.)

Bert Delano, director of corporate communication at Allegheny Ludlum Corp., Pittsburgh, agreed with Bethlehem's Mr. Ehrsam that high quality steel is in for 1988.

"There is an obvious 'quality ethic' that has been developing in this country over the last decade. People want things to last longer, to service better, and not fall apart," he observed.

Because of the warranties attached to many products, Mr. Delano said, companies are not going to stick their neck out for a product that is not going to last. "So that brings them to a product like stainless steel.

"We believe there are a myriad of new applications and markets for stainless steel in the next few years and well into the 1990s," said Mr. Delano.

One of the most exciting new applications for Allegheny Ludlum, according to Mr. Delano, is in high efficiency gas home heating furnaces, now mandated by law. "By designing a stainless steel heat recuperator, furnace manufacturers now offer furnaces with over 90 pct fuel efficiency, an increase from less than 50 pct."

These new designs require up to 12 lbs of stainless steel per furnace and, said Mr. Delano, the material recommended by corrosion engineers consists of one of two alloys patented by Allegheny Ludlum.

"What you face is a high intensity of heat and corrosion and other operating conditions that require the advantages of our special alloy stainless. So the product that we make fits their needs," he said.

The company predicts that by 1990 the new furnaces will mean millions of lbs of stainless steel per year. "Our estimates is that the potential annual demand by 1990 will be about 16 million lbs of stainless steel for high efficiency gas furnaces, so this is a significant market," Mr. Delano said.

Stainless steel provides a durability that other materials, like enameled iron and plated carbon steel, cannot match, said Mr. Delano. In addition, environmental problems associated with porcelain and plating processes increase the costs of these materials.

Weirton's new, easy-open steel can end is aimed at putting a dent in the aluminum industry's bid for the food can market.

Other markets on the horizon for Allegheny Ludlum, include washer and dryer applications, the retrofitting of nuclear power plants to replace other materials that have corroded or are predicted to corrode, and oil pipe systems for increased offshore drilling.

Service water piping systems for drilling, after a time, must be replaced, and some of Allegheny Ludlum's new alloys are candidates for use in these applications, said Mr. Delano.

"To some extent it will depend on the growth of the market and the continued drilling offshore."

The boom the stainless steel industry has been experiencing during the last year or two wasn't so much due to new applications for stainless but the broad growth of stainless in several industries.

The offshore drilling market is not a new one for steel, but improvements have allowed stainless steel to replace other materials.

According to Dr. James Redmond, president of Technical Marketing Resources in Pittsburgh, stainless steel that handles seawater has been used to replace corrosion plagued copper-based alloys.

"Because stainless steel stays cleaner, the heat transfer in actual use over a period of time, in a seasoned condition, is better than that of the copper alloys," he said.

Another area seeing growth in the high-alloyed austenitic stainless steel is service water piping in nuclear power plants, said Dr. Redmond.

"Things like sea-cure have been very successful in replacing copper nickel and condenser tubing in power plants," said Dr. Redmond.

"In the past people have used cement pipes and lined carbon steel, and there has been tremendous corrosion problems, and this is why the 6-moly stainless steels, like the 254 SMO, were used first in Sweden."

Stainless steel is also replacing material in the auto industry.

According to Dr. Redmond, the automotive industry is an important market for new steel replacements.

"In the drive for longer life and emphasis on improved quality and durability, there certainly has been a great movement toward using stainless steel," Dr. Redmond said. "In some ways it has almost been a quiet revolution.

(Cont. on p. 28.)

"I think the boom the industry has been experiencing during the last year, or so, wasn't so much new application as the use of stainless steel. In the auto area, there certainly has been a nice growth in the use of stainless steel in exhaust systems," he said.

Armco has recently received a patent for a new oxidation-resistant steel. The steel is 409 stainless steel base, and is .020 in. thick and coated with a heavy pure aluminum coating. The material is cold reduced to foil gages of about .0025 in. thick. It is heat treated after rolling which diffuses the base material and coating together.

"In terms of sheer tonnage, the use of 409 in automotive exhaust systems is probably the largest new application over the last five years."

Dr. Redmond added that type 409, originally intended for catalytic converters, is now being used for mufflers and tailpipes..

The carbon steel, that most exhaust systems were made from, would rust away after a while, said Dr. Redmond, usually corroding from the inside out.

In the last 15 years sheet steel for automobile bodies has shifted from cold-rolled steel to corrosion resistant materials, said Armco's Mr. Chalk. Although it's a market that has always been there, a lot a technology, such as the 409 stainless, has been put into improving the product.

"A variety of products have been introduced to upgrade the performance of what was traditionally just regular old carbon steel," Mr. Chalk said.

According to Mr. Chalk, one example would be the catalytic converters that are on most cars now. "The majority of them have one form or another of ceramic as the substrate for the catalytic. We've been working on a steel product based on stainless steel that can be used in that same application."

According to the company, the newly designed catalytic converter, in addition to its cost advantage, also offers better integrity and heats up faster than competitive materials.

Exports

Is there an export market out there for U.S. steel?

Many believe there is.

Robert Cassidy, director of steel trade policy at the U.S. Trade Representative's office, Washington, D.C., said the U.S. steel industry has a greater edge on exports in countries where a major change in the exchange rate has taken place, and that one of the government's responsibilities is to assure that these markets remain open to increase U.S. exports.

The American steel industry is now geared to compete in the international market because of the dollar situation

"What that level of exports will be, I would not predict," Mr. Cassidy admitted.

"One would expect the U.S. to be at a relative advantage on the downstream products. You might see that in the products made of wire rod and pipe. But where the advantages lie would have to be the most competitive market forces," he said.

One of the problems that might prevent the industry from exporting a large amount, said Mr. Cassidy, is the industry's inability to increase production because of the high rates of capacity utilization for our domestic market.

"At least in the short term that might constrain them a bit. But as some of the domestic demand subsides then there may be increased production available for exports.

Overcoming the problems in exporting, continued Mr. Cassidy, is going to depend on the individual companies willingness to get out into the market and sell. "In the early 1980s, the steel industry sort of retrenched from the export market, so it's going to be difficult to get back into it.

Nucor's Mr. Iverson also believes the U.S. steel industry hasn't done enough exporting in the past and the ability to export depends on the export structure.

"It's not whether we will be able to export more steel and steel products than we have in the past. But, it's worthwhile to note that we really don't have much of a structure in this country for exporting steel or products. We really have to rebuild the exporting abilities we have," he said.

NATCO's Dr. Koul said some in the U.S. steel industry are reviving their export groups and that the time has come to export.

"Last year the American export was 1 million tons, which is negligible. We should take a part of the international market whatever it is. The American steel industry is now geared to compete in the international market because of the dollar situation. That should be a big push. The situation at present is they can not keep up with the local market, and when you come to that type of situation, you forget that a time will come when demand may not be that much. Where will the steel go then? So you have to be in the international market," said Dr. Koul.

USS Division of USX Corp.is taking advantage of the new export market by reopening its exporting division.

Ernie Glenn, a spokesman for USS, said the overseas market is looking more promising than it has for years.

U.S. Steel International, Inc., the exporting arm for USS has been dormant because, according to Mr. Glenn, there were no export opportunities. "We see the potential for far greater export opportunities again and we have therefore taken this step. We'll have sales representatives in foreign countries and representatives to market our products as the opportunities arise," said Mr. Glenn.

By M. Dougherty

4TH QUARTER EARNINGS
A DOSE OF PROFITS

Steel and nonferrous metals shipments are up, prices are up, and as a consequence, the metals industry's balance sheets have a healthy glow of profitability.

The steel industry turned several corners in 1987.

Steel shipments, which had been averaging under 70 million tons since 1982, rose to about 77 million tons.

After declining for five years, steel prices began rising.

Steel earnings probably turned a corner. Lukens, Inc., had record profits as well as record sales in 1987. The net income of Inland Steel Industries, Inc., rose from $19 million in 1986 to nearly $145 million in 1987.

CF&I Steel Corp. had its first profitable quarter in two and a half years. The steel industry as a whole made money in 1987. That certainly constituted a recovery from the loss of $4.2 billion in 1986.

One sign of the times was the word that dividends were being increased by Inland and Lukens, and a cash dividend was being initiated by Birmingham Steel Corp.

There has been a recovery, but with so many special charges and credits, it's difficult to get a clear picture of steel profitability.

USX Corp., for example, went from a net loss of $1.8 billion in all of 1986 to a net profit of $219 million in 1987. That seemed a great comeback from the strike impacted period until you learned that USX lost $14 million in the fourth quarter of 1987.

That looked bad until you saw that the steel division (USS) had an operating income of $89 million in the fourth quarter. However, $66 million of this came from a remeasuring of a restructuring provision.

On the other hand, income was reduced $45 million by the use of high-cost inventory. This charge was partly offset by a $17 million credit from another inventory adjustment.

The exact net effect of all this may be difficult to determine, but in terms of shipments, prices and profits, the steel trend is clearly upward. "We anticipate shipping more in 1988 than in 1987," said David M. Roderick, chairman of USX.

Mr. Roderick explained that his company will be in the unique position of adding capacity in 1988. The startup of new facilities at Fairfield, Ala., will boost production 10 pct, he said.

Until recently, it didn't appear that anyone would need more steel production or capacity. The prevailing view was that steel shipments would fall to about 70 million tons in 1988. That is still the official view, but with shipments running at an annual rate of 80 million tons, people are now quietly revising their estimates upward.

"Our order book remains good through the second quarter" said Howard M. Love, chairman of National Steel Corp. "For the first time in several years, supply and demand appear to be in balance and that has had a positive impact on prices." National earned $22.6 million in the fourth quarter.

What makes the outlook particularly bright is the new opportunity for foreign sales. This is partly a matter of the currency changes and reduced domestic costs. It is also due to a tightening of the world steel market.

"I think what has happened is that the major producers have brought supply and demand into closer balance," said Mr. Roderick. Japan's supply of plates and structurals has tightened, he said, and flat-rolled products are scarce in Europe.

If domestic demand slackens, said Mr. Roderick, there is a ready market abroad for any surplus. The revived international department of USX is already getting "a tremendous number of inquiries from all over the world."

The brightened steel outlook was pointed up by the $71.5 million earned by Bethlehem Steel Corp. in the fourth quarter. Various charges and credits blurred the earnings report, but leaving these out, the operating profit was impressive for a company considered a prime candidate for bankruptcy only a year ago.

The net income of Armco, Inc., was only $3.1 million in the fourth quarter of 1987. That was down from $34.6 million in the final quarter of 1986. Inventory adjustments boosted the 1986 profit and reduced 1987 earnings.

A cloud on the steel horizon is the rising cost of raw material. High scrap prices were cited by Florida Steel Corp. as one factor in an earnings decline from $3.2 million in the fourth quarter of 1986 to a little under $1.6 million in the 1987 quarter. Steel prices have since caught up with the scrap

EARNINGS

STEEL: TURNING THE CORNER

FOURTH QUARTER PROFIT REPORT—1987 (In Millions of Dollars)

	EARNINGS				SALES		
	E/S	4th Q 1987	4th Q 1986	Pct Change	4th Q 1987	4th Q 1986	Pct Change
USX	—	(14)	(1,415)	—	4,232.0	2,770.0	+53.0
LTV	7.0	140.6	(470.1)	—	1,986.0	1,916.7	+3.6
BETHLEHEM	5.9	71.5	34.2	+109.0	1,205.1	1,022.4	+18.0
INLAND	6.5	59.5	30.2	+97.0	960.6	817.6	+13.0
ARMCO	0.4	3.1	34.6	-91.0	787.4	668.2	+18.0
NATIONAL	3.5	22.6	2.8	+707.0	640.6	593.0	+8.0
TOTAL	2.9	283.3	(369.7)	—	9,771.7	7,787.9	+25.0
WEIRTON	4.7	15.7	10.0	+57.0	331.3	313.8	+5.6
WHEEL-PGH	—	(164.8)	(213.8)	—	249.8	240.7	+3.7
ALLEG. LUD.	4.6	10.7	—	—	234.6	181.0	+30.0
LUKENS	4.9	6.6	(0.3)	-	133.2	104.6	+27.0
CARPENTER	3.2	4.0	2.0	+100.0	125.9	110.5	+14.0
FLORIDA	1.4	1.6	3.2	-51.0	112.6	74.4	+51.0
CME	3.7	3.4	(9.8)	—	91.9	64.7	+42.0
IRMINGHAM	6.2	5.1	2.6	+93.0	82.2	42.0	+93.0
LACLEDE	6.9	4.8	1.6	+206.0	70.0	58.1	+20.0
CF&I	1.7	1.3	(2.2)	—	76.4	49.6	+54.0

( ) Indicates a loss

YEARLY PROFIT REPORT—1987 (In Millions of Dollars)

	EARNINGS				SALES		
	E/S	1987	1986	Pct Change	1987	1986	Pct Change
USX	1.5	219.0	(1,833.0)	—	14,836.0	14,938.0	-0.7
LTV	6.6	502.6	(3,268.3)	—	7,581.8	7,271.4	+4.3
BETHLEHEM	3.8	174.3	(152.7)	—	4,620.5	4,332.9	+6.6
INLAND	4.2	145.0	19.3	+653.0	3,453.2	3,173.2	+8.8
ARMCO	4.0	117.6	(472.0)	—	2,927.2	2,640.5	+11.0
NATIONAL	2.0	47.8	(59.8)	—	2,416.5	2,127.8	+14.0
TOTAL	3.4	1,206.3	(5,766.5)	—	35,835.2	34,483.8	+3.9

NONFERROUS: HIGHER PRICES PAID A DIVIDEND

FOURTH QUARTER PROFIT REPORT—1987 (In Millions of Dollars)

	EARNINGS			SALES		
	4th Q 1987	4th Q 1986	Pct Change	4th Q 1987	4th Q 1986	Pct Change
ALCAN	$136.0	$61.0	+123.0	$1,868.0	$1,482.0	+26.0
ALCOA	132.8	165.3	-19.7	1,466.1	1,166.4	+25.7
ASARCO	70.3	28.2	+149.3	429.9	254.9	+68.7
BRUSH WELLMAN	8.5	6.2	+37.1	86.0	63.0	+36.5
COMINCO	75.0	(143.4)	—	397.8	337.3	+17.9
FALCONBRIDGE*	43.2	6.1	+608.2	433.9	285.0	+52.3
INCO	75.0	(6.5)	—	571.0	384.0	+48.7
KAISERTECH	44.8	(22.6)	—	516.5	508.6	+1.6
NEWMONT MINING	4.9	(42.4)	—	143.5	114.3	+25.6
PHELPS DODGE	105.4	10.8	+875.9	506.1	206.2	+145.4
PINE POINT MINES*	6.9	6.6	+4.8	28.3	27.0	+4.8
REYNOLDS METALS	80.0	76.3	+4.9	1,155.9	1,014.6	+13.9
VULCAN MATERIALS	27.4	15.6	+75.6	246.3	197.7	+24.6

( ) Indicates a loss   * Canadian funds

bulge, said the company, and earnings will be restored in 1988.

Birmingham Steel Corp. seems to have taken the scrap price escalation in stride. Net earnings of Birmingham's growing network rose from $2.6 million in the fourth quarter of 1986 to $5 million in the fourth quarter of 1987. During the quarter, the company began operating its newest acquisition, Barbary Coast Steel in Emeryville, Calif.

The zooming price of stainless scrap didn't seem to hurt Allegheny Ludlum Corp., now a public company again. "With our outstanding performance in 1987, return on shareholders' equity was 22 pct," said Richard P. Simmons, chairman of Allegheny Ludlum.

Nonferrous

The nonferrous metals industries turned in one of its best performances in many years during 1987. Prices, shipments, and as a results, profits rose for most of the major segments of the industry.

Aluminum industry shipments were up 6.4 pct by the end of November to an estimated 15.1 billion lbs, according to the Aluminum Association. Mill products shipments rose 4.7 pct to nearly 12 billion lbs, the association said, while ingot shipments rose 13.3 pct, to an estimated 3.1 billion lbs, and exports climbed 34.2 pct, to 1.1 billion lbs.

And as Reynolds Metals economist Lloyd T. Carroll noted in a recent speech of the National Aluminum Distributors Association, the gains in 1987 were gains in consumption and not customer inventories.

The fourth quarter results served to reassure industry members that the turnaround was not only a certainty but also a harbinger of better days ahead.

Paul O'Neill, chairman of the Aluminum Co. of America (Alcoa) noted that the final quarter of 1987 continued the steady upward trend of the year. Demand for aluminum products remains strong and he sees no end to that pace.

"Despite the unrest in the financial markets since October," he added, "we do not see a break in the recovery for our industry."

Alcoa reported a 24 pct increase in sales for the fourth quarter, to $1.44 billion from $1.16 billion in the same period of 1986. For the year, the big aluminum maker revenues rose to $5.49 billion, up 18 pct from the $4.67 total from the previous year.

The company's fourth quarter earnings were down when compared to the year-earlier quarter, but the 1986 results included a real estate sale (Alcoa Properties, Inc.) and other special items. Excluding those items, profits for the fourth quarter of 1986 totaled $27.1 million compared with the $132.8 million for the same three-month span in 1987.

Copper producers turned in stronger balance sheets at year-end, thanks largely to a dramatic gain in prices

The outlook from William O. Bourke, president and CEO of Reynolds Metals Co., was equally upbeat. "As we enter the new year, aluminum demand is on the rise and both producer and customer inventories are at historic lows," he said.

Reynolds' sales totaled $1.12 billion for the last three months of 1987 compared to $1.01 billion in the same period of 1986. Net sales for the year increased to $4.3 billion from the $3.8 billion for 1986.

Reynolds' income in the fourth quarter rose to $80 million compared to the 1986's period's $76.3 million, which included a $116.2 million gain from the sale of its Robertshaw Controls subsidiary.

David M. Culver, chairman and CEO of Alcan Aluminium, Ltd., pointed to the strength of the world aluminum market and cost-cutting efforts as the keys to the Canadian aluminum producer's sharp gains in earnings last year.

Alcan's earnings in the fourth quarter more than doubled, to $136 million from $61 million in the same period of 1986. Sales in the period were up 26 pct, to an estimated $1.9 billion from $1.5 billion in the year-earlier period. For the year, earnings rose to $433 million compared to $277 million in 1986. Sales increased to $6.8 billion in 1987 compared to $6.0 billion for the previous year.

Copper producers turned in stronger balance sheets at year-end, thanks largely to a dramatic gain in prices during the latter part of 1987. From a low of 63¢ a lb in January, the red metal rose to a record $1.47 a lb in December.

Phelps Dodge Corp. reported a meteoric gain in earnings for the last three months of 1987—to $105.4 million from $10.8 million in the same period of 1986. Sales for the quarter totaled $506.1 million, more than double the year-earlier tally of $206.2 million.

Asarco, Inc., also posted sharply higher sales and profits for the quarter. Sales in the final three months of 1987 climbed to $429.9 million, up nearly 69 pct from the $254.9 million in the same period of 1986. Earnings rose 149.9 pct to $70.3 million compared with $28.2 million in the final quarter of the previous year.

Inco posted profits of $75 million for the fourth quarter of 1987 compared to a $6.5 million loss for the same period of 1986. The company attributed the gains to improved nickel, copper and precious metals prices; increased nickel deliveries, and lower product costs.

Nickel deliveries reached their highest levels in more than a decade, the company noted. To meet the heavy demand, the big Canadian nickel producer boosted output to 430 million lbs during 1987, compared to 357 million pounds in 1986, and drew down its finished nickel inventories to 57 million lbs, the lowest level since 1970.

By George J. McManus
and Michael Marley

MATERIALS PRICES

PRICE & PRODUCTION DATA

(Effective February 1, 1988)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	282	253	218	119
Pittsburgh	199	190	196	170
Youngstown	118	118	115	110
Lake Erie	164	163	154	111
Detroit	167	160	137	150
Chicago	536	496	494	337
Midwest	184	192	183	163
Southern	209	213	195	138
Western	80	81	55	39
U.S. Production	1,939	1,866	1,747	1,337

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 37.344*
Pellets (per iron unit natural)	gross-ton 58.0-59.4**
Pellets (per iron unit natural)	gross-ton 72.45-86.9***
Mesabi, regular-unscreened	gross-ton 32.53
Mesabi, non-bessemer	gross-ton 30.03-31.53

*37.344¢—U.S. Steel, 5/20/87, FOB Mount Iron, Minn. **58.0¢—Mineral Services, Inc. as of 8/13/85 **59.4¢—Inland Steel Mining, 1/1/85 and Pickands Mather, 8/1/85, delivered hold of vessel, upper Lake ports. ***72.45¢—Cleveland-Cliffs as of 12/30/86. 86.9¢—Oglebay Norton 3/25/82; Hanna Mining 2/26/82.

STEEL PRODUCTION, COMPOSITE PRICES

(Effective February 1, 1988)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1988	To Date 1987
Net tons, in thousands	1,939	1,866	7,954	5,743
Capability Utilization Rate	90.3	86.9	86.4	62.9

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 1/3/88)	24.223	24.223	26.002	25.236
Pig Iron** (Net ton= 2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$113.17	$101.83	$ 97.83	$ 77.50
No. 2 bundles	$ 71.50	$ 67.17	$ 65.50	$ 51.17

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$123.50	$108.50	$103.50	$ 82.50
No. 1 steel, Philadelphia	98.50	95.50	88.50	71.50
No. 1 steel, Chicago	117.50	101.50	101.50	78.50
No. 1 bundles, Detroit	138.50	107.50	106.50	85.50
Low Phos., Youngstown	130.50	108.50	105.50	82.50
No. 1 mach'y cast., Pgh	102.50	92.50	92.50	74.50
No. 1 mach'y cast., Phila	111.50	106.50	101.50	93.50
No. 1 mach'y cast., Chi	120.50	115.50	115.50	101.50

*Finished Steel Composite: Weighted index of steel bars, structurals, plates, rails, hot rolled and cold rolled sheets.

**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective February 1, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	82.00	84.00	2/1/88
Copper (C)	110.00	128.00	2/1/88
Lead	37.00	38.00	2/1/88
Magnesium Ingot	153.00	148.00	12/9/85
Nickel (LME)	355.00	344.00	2/1/88
Zinc	46.00	45.00	1/14/88

ALUMINUM: Avg. for last week & previous week. COPPER (C)=cathode. LEAD: common grade. MAGNESIUM: 99.8% pig delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$248.00
Beryllium-copper, per lb. cont. Be	$152.00
Beryllium 97% powder 200	$196.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz.	$452.70
Indium, per troy oz.	$9.95
Iridium, per troy oz.	$345.00
Magnesium sticks, 10,000 lbs.	$2.12
Mercury, per 76-lb., f.o.b. N.Y.	$348.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz.	$116.00
Platinum, per troy oz.	$456.00
Rhodium, per troy oz.	$1,255.00
Silver ingots, per troy oz.	$6.56
Titanium sponge, melt grade	$4.00
Tungsten powder, hyd red.	$9.53-9.85
Vanadium	$6.00
Zirconium sponge	$11.20-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

Jan. 25—306.00
Jan. 26—305.00
Jan. 27—306.00
Jan. 28—307.00
Jan. 29—307.00

Scrap Prices
Brass Mill Scrap

(Cents per lb., over 20,000 lbs. add 1¢ per lb.)

	Solids	Turnings
Copper	80	75
Yellow brass	70½	69½
Red brass	68½	64½
Comm. bronze	69	64
Mang. bronze	52	51
Free cutting rod ends	63½	62½

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	80
No. 2 copper wire	70
Light copper	64

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	70
No. 2 copper wire	61
Light copper	54
No. 1 composition	55
No. 1 comp. turnings	55
Hvy. yellow brass solids	41
Hvy. yellow brass turnings	35
Radiators	38

Aluminum

New mixed clips	56 — 57
Old sheet	50 — 51
Old cast	51 — 52
Clean dry borings	46 — 47

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	50 — 51
Mixed L.C. clips	49 — 50
Old sheets and cast	43 — 44
Borings and turnings	37 — 38
Duraluminum clippings	43 — 44

Copper and Brass

No. 1 copper wire	65 — 67
No. 2 copper wire	55 — 56
Light copper	49 — 50
Radiators	38 — 39
No. 1 composition	53 — 54
No. 1 composition turnings	49 — 50
Cocks and faucets	46 — 47
Clean heavy yellow brass	42 — 43
Brass pipe	48 — 49
New soft brass clippings	60 — 61

Lead

Heavy soft lead	13 — 14
Whole batteries	2 — 3
Type metal	23 — 24
Electrotype	16 — 17

Nickel

Nickel solids	200 —210
Nickel rod ends	203 —213
Nickel sheets, clips	203 —213
Nickel turnings	89 — 99

Zinc

New zinc clippings	17 — 18
Old diecast zinc	13 — 14

MATERIALS PRICES

EFFECTIVE FEBRUARY 1, 1988

(Effective February 1, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 123.00 to	$ 124.00
No. 2 hvy. melting	113.00 to	114.00
No. 1 dealer bundles	162.00 to	163.00
No. 1 factory bundles (auto)	162.00 to	163.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	162.00 to	163.00
Machine shop turnings	23.00 to	24.00
Shoveling turnings	69.00 to	70.00
Cast iron borings	68.00 to	69.00
Low phos. punchings plate	162.00 to	163.00
Heavy turnings	113.00 to	114.00
No. 1 RR hvy. melting	135.00 to	136.00
Rails, 2 ft. and under	164.00 to	165.00
Scrap rails, random lgth	140.00 to	141.00
RR specialties	150.00 to	151.00
No. 1 machinery cast	102.00 to	103.00
Cupola cast	94.00 to	95.00
Heavy breakable cast	40.00 to	41.00
Stainless		
18-8 bundles and solids	920.00 to	925.00
18-8 turnings	820.00 to	825.00

Chicago

No. 1 hvy. melting	$ 117.00 to	$ 118.00
No. 2 hvy. melting	112.00 to	113.00
No. 1 dealer bundles	156.00 to	157.00
No. 1 factory bundles (auto)	155.00 to	156.00
No. 2 dealer bundles	78.00 to	79.00
No. 1 busheling	147.00 to	148.00
Shredder scrap	139.00 to	140.00
Machine shop turnings	55.00 to	56.00
Mixed borings and turnings	47.00 to	48.00
Shoveling turnings	64.00 to	65.00
Cast iron borings	69.00 to	70.00
Low phos. forge crop	162.00 to	163.00
Low phos. punchings plate 1/4 in. and heavier	178.00 to	179.00
Low phos. 2 ft. and under	173.00 to	174.00
No. 1 RR hvy. melting	128.00 to	129.00
Scrap rails random lgth	130.00 to	131.00
Reroller rails	149.00 to	150.00
Rails, 2 ft. and under	173.00 to	174.00
RR couplers and knuckles	124.00 to	125.00
RR car axles	164.00 to	165.00
No. 1 machinery cast	120.00 to	121.00
Cupola cast	109.00 to	110.00
Stove plate	119.00 to	120.00
Steel car wheels	156.00 to	157.00
Stainless		
18-8 bundles and solids	800.00 to	810.00
18-8 turnings	700.00 to	710.00
430 bundles and solids	180.00 to	190.00
430 turnings	95.00 to	105.00

Philadelphia

No. 1 hvy. melting	$ 97.00 to	$ 100.00
No. 2 hvy. melting	87.00 to	90.00
No. 1 dealer bundles	145.00 to	148.00
No. 2 dealer bundles	60.00 to	63.00
No. 1 busheling	130.00 to	133.00
Shredder scrap	125.00 to	128.00
Machine shop turnings	29.00 to	32.00
Mixed borings and turnings	29.00 to	32.00
Shoveling turnings	50.00 to	53.00
Low phos. 5 ft. and under	125.00 to	128.00
Low phos. 2 ft. punchings	145.00 to	148.00
Electric furnace bundles	150.00 to	153.00
RR specialties	125.00 to	128.00
Rails, 2 ft. and under	145.00 to	148.00
Cupola cast	99.00 to	102.00
Heavy breakable cast	52.00 to	55.00
No. 1 machinery cast	110.00 to	113.00

Detroit

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 85.00 to	$ 86.00
No. 2 hvy. melting	83.00 to	84.00
No. 1 dealer bundles	138.00 to	139.00
No. 2 bundles	61.00 to	62.00
No. 1 busheling	136.00 to	137.00
Drop forge flashings	85.00 to	86.00
Machine shop turnings	53.00 to	54.00
Mixed borings and turnings	25.00 to	26.00
Shoveling turnings	53.00 to	54.00
Cast iron borings	59.00 to	60.00
Heavy breakable cast	45.00 to	46.00
Mixed cupola cast	62.00 to	63.00
Automobile cast	84.00 to	85.00
Stainless		
18-8 bundles and solids	805.00 to	815.00
18-8 turnings	440.00 to	450.00
430 bundles and solids	160.00 to	170.00

Youngstown

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 105.00 to	$ 106.00
No. 2 hvy. melting	94.00 to	95.00
No. 1 dealer bundles	146.00 to	147.00
No. 2 dealer bundles	64.00 to	65.00
Machine shop turnings	45.00 to	46.00
Shoveling turnings	45.00 to	46.00
Low phos. plate	130.00 to	131.00
Electric furnace bundles	126.00 to	127.00
Galvanized bundles	123.00 to	124.00

Cleveland

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 100.00 to	$ 101.00
No. 2 hvy. melting	89.00 to	90.00
No. 1 dealer bundles	146.00 to	147.00
No. 1 factory bundles	144.00 to	145.00
No. 2 bundles	60.00 to	61.00
No. 1 busheling	141.00 to	142.00
Machine shop turnings	50.00 to	51.00
Shoveling turnings	50.00 to	51.00
Cast iron borings	50.00 to	51.00
Cut structural & plates, 5 ft. and under	119.00 to	120.00
Cut structural & plates, 2 ft. and under	142.00 to	143.00
Low phos. punchings plate	145.00 to	146.00
Foundry steel, 2 ft. & under	92.00 to	93.00
No. 1 RR hvy. melting	112.00 to	113.00
Rails, 2 ft. and under	144.00 to	145.00
Rails, 18 in. and under	146.00 to	147.00
No. 1 machinery cast	90.00 to	91.00
Mixed cast	55.00 to	56.00
Stainless		
18-8 bundles	810.00 to	820.00
18-8 turnings	445.00 to	455.00
430 bundles	165.00 to	175.00

Buffalo

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 90.00 to	$ 91.00
No. 2 hvy. melting	80.00 to	81.00
No. 1 busheling	139.00 to	140.00
No. 1 dealer bundles	139.00 to	140.00
No. 2 bundles	45.00 to	46.00
Machine shop turnings	28.00 to	29.00
Mixed borings and turnings	28.00 to	29.00
Shoveling turnings	34.00 to	35.00
Cast iron borings	39.00 to	40.00
Low phos. plate	135.00 to	136.00
Structural and plate, 2 ft. and under	136.00 to	137.00
Rails, 2 ft. and under	139.00 to	140.00
Scrap rails, random lgth	114.00 to	115.00
No. 1 machinery cast	104.00 to	105.00
No. 1 cupola cast	87.00 to	88.00

St. Louis

No. 1 hvy. melting	$ 112.00 to	$ 113.00
No. 2 hvy. melting	100.00 to	101.00
No. 1 busheling	139.00 to	140.00
No. 1 dealer bundles	152.00 to	153.00
No. 2 bundles	99.00 to	100.00
Machine shop turnings	41.00 to	42.00
Shoveling turnings	45.00 to	46.00
Cast iron borings	51.00 to	52.00
No. 1 RR hvy. melting	136.00 to	137.00
Rails, random length	118.00 to	119.00
Rails, 5 ft. and under	139.00 to	140.00
Plate and structural, 5 ft. and under	136.00 to	137.00
Cupola cast	89.00 to	90.00
Heavy breakable cast	43.00 to	44.00
Stove plate	112.00 to	113.00
Steel car wheels	139.00 to	140.00
Rerolling rails	130.00 to	131.00
Unstripped motor blocks	60.00 to	61.00

Birmingham

No. 1 hvy. melting	$ 97.00 to	$ 98.00
No. 2 hvy. melting	90.00 to	91.00
No. 1 dealer bundles	104.00 to	105.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	102.00 to	103.00
Shredder scrap	132.00 to	133.00
Machine shop turnings	46.00 to	47.00
Shoveling turnings	56.00 to	57.00
Cast iron borings	38.00 to	39.00
Electric furnace bundles	85.00 to	86.00
Elec. furnace, 3 ft. & under	87.00 to	88.00
Structural and plate, 2 ft.	146.00 to	147.00
Structural and plate, 4 ft.	141.00 to	142.00
No. 1 RR hvy. melting	141.00 to	142.00
Scrap rails, random lgth	129.00 to	130.00
Rails, 2 ft. and under	148.00 to	149.00
Angles and splice bars	138.00 to	139.00
No. 1 cupola cast	92.00 to	93.00
Unstripped motor blocks	99.00 to	100.00

Cincinnati

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 100.00 to	$ 101.00
No. 2 hvy. melting	92.00 to	93.00
No. 1 dealer bundles	130.00 to	131.00
No. 2 bundles	56.00 to	57.00
No. 1 busheling	130.00 to	131.00
Machine shop turnings	30.00 to	31.00
Shoveling turnings	33.00 to	34.00
Cast iron borings	41.00 to	42.00
Low phos. 18 in. and under	138.00 to	139.00
Rails, random length	113.00 to	114.00
Rails, 2 ft. and under	142.00 to	143.00
No. 1 cupola cast	88.00 to	89.00
Heavy breakable cast	49.00 to	50.00
Drop broken cast	103.00 to	104.00

New York

Brokers buying prices per gross [illegible] cars

No. 1 hvy. melting	$ 63.00 to	$ 64.00
No. 2 hvy. melting	56.00 to	57.00
No. 2 dealer bundles	35.00 to	37.00
Mixed borings and turnings	10.00 to	11.00
Shoveling turnings	10.00 to	12.00
Clean cast, chem. borings	37.00 to	38.00
No. 1 machinery cast	80.00 to	81.00
Mixed yard cast	52.00 to	53.00
Heavy breakable cast	16.00 to	18.00
Stainless		
18-8 prepared solid	630.00 to	650.00
18-8 turnings	410.00 to	430.00
430 prepared solids	110.00 to	120.00
430 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 65.00 to	$ 67.00
No. 2 hvy. melting	55.00 to	57.00
No. 1 dealer bundles	88.00 to	90.00
No. 2 bundles	30.00 to	32.00
No. 1 busheling	83.00 to	85.00
Shredder scrap	78.00 to	80.00
Machine shop turnings	18.00 to	20.00
Shoveling turnings	23.00 to	25.00
No. 1 machinery cast	85.00 to	87.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	22.00 to	24.00

San Francisco

No. 1 hvy. melting	$ 66.00 to	$ 68.00
No. 2 hvy. melting	60.00 to	62.00
No. 1 dealer bundles	58.00 to	60.00
No. 2 dealer bundles	46.00 to	47.00
Machine shop turnings	15.00 to	16.00
Cast iron borings	15.00 to	16.00
No. 1 cupola cast	87.00 to	89.00

Los Angeles

No. 1 hvy. melting	$ 63.00 to	$ 65.00
No. 2 hvy. melting	57.00 to	59.00
No. 1 dealer bundles	55.00 to	57.00
No. 2 dealer bundles	42.00 to	44.00
Machine shop turnings	12.00 to	13.00
Shoveling turnings	13.00 to	14.00
Cast iron borings	13.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	80.00 to	82.00
No. 1 cupola cast	84.00 to	86.00

Seattle

No. 1 hvy. melting	$ 90.00 to	$ 91.00
No. 2 hvy. melting	82.00 to	83.00
No. 2 bundles	65.00 to	66.00
No. 1 cupola cast	95.00 to	96.00
Mixed yard cast	85.00 to	87.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 103.00
No. 2 hvy. melting, cut 2 ft. and under	90.00
No. 1 dealer bundles	128.00
No. 2 bundles	79.00
Mixed steel scrap	75.00
Bush. new fact. prep'd	123.00
Bush. new fact. unprep'd	99.00
Machine shop turnings	31.00
Short steel turnings	31.00
Mixed borings and turning	25.00
Cast scrap	102.00

Houston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 109.00 to	$ 110.00
No. 2 hvy. melting	99.00 to	100.00
No. 2 bundles	57.00 to	58.00
Machine shop turnings	42.00 to	43.00
Crushed turnings	52.00 to	53.00
Shredder scrap	115.00 to	116.00
Cut structural plate, 2 ft. and under	130.00 to	131.00
Cut structural plate, 5 ft. and under	120.00 to	121.00
Unstripped motor blocks	60.00 to	61.00
Cupola cast	95.00 to	96.00

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IRON AGE

THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

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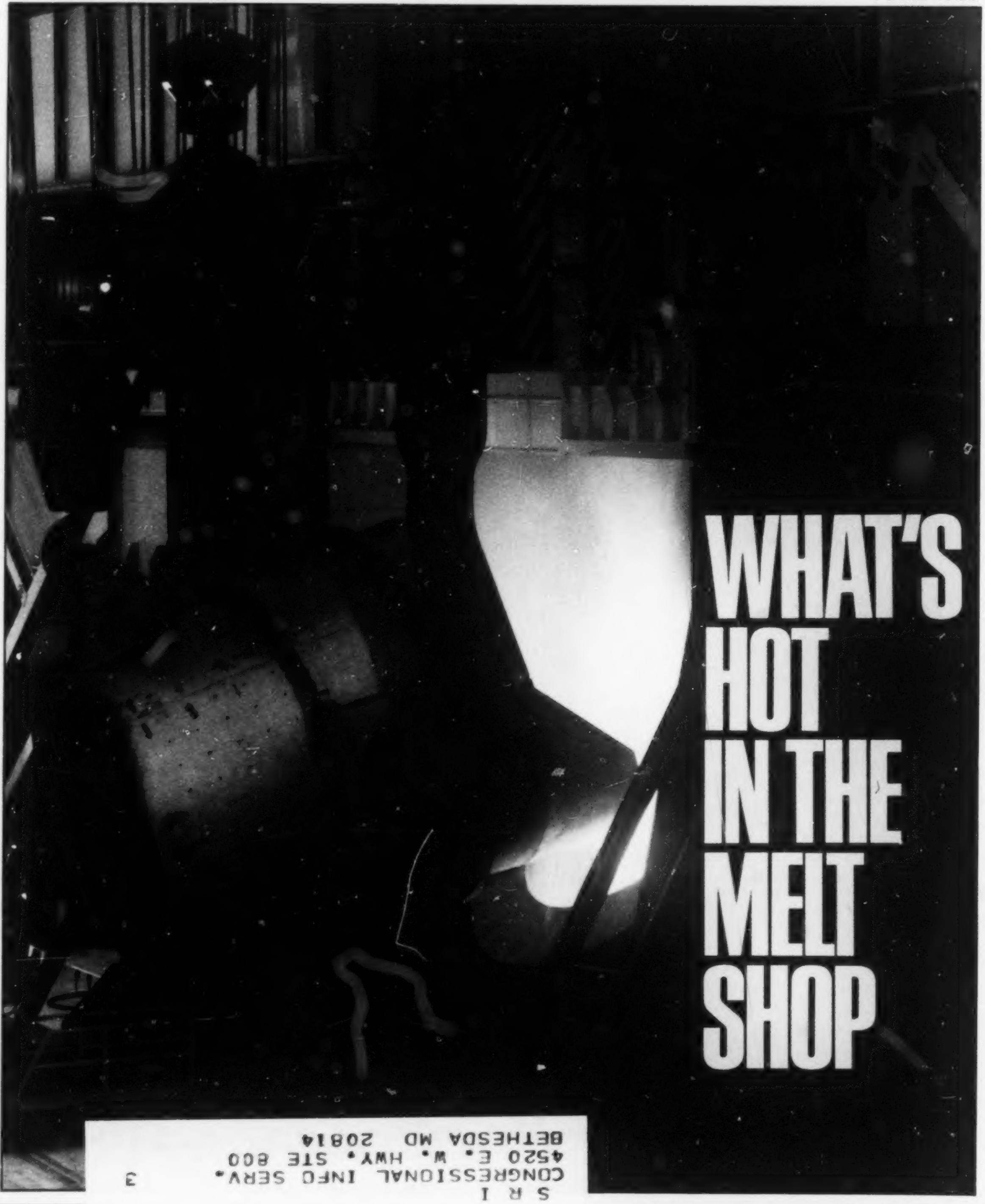
APRIL 1988



WHAT'S HOT IN THE MELT SHOP

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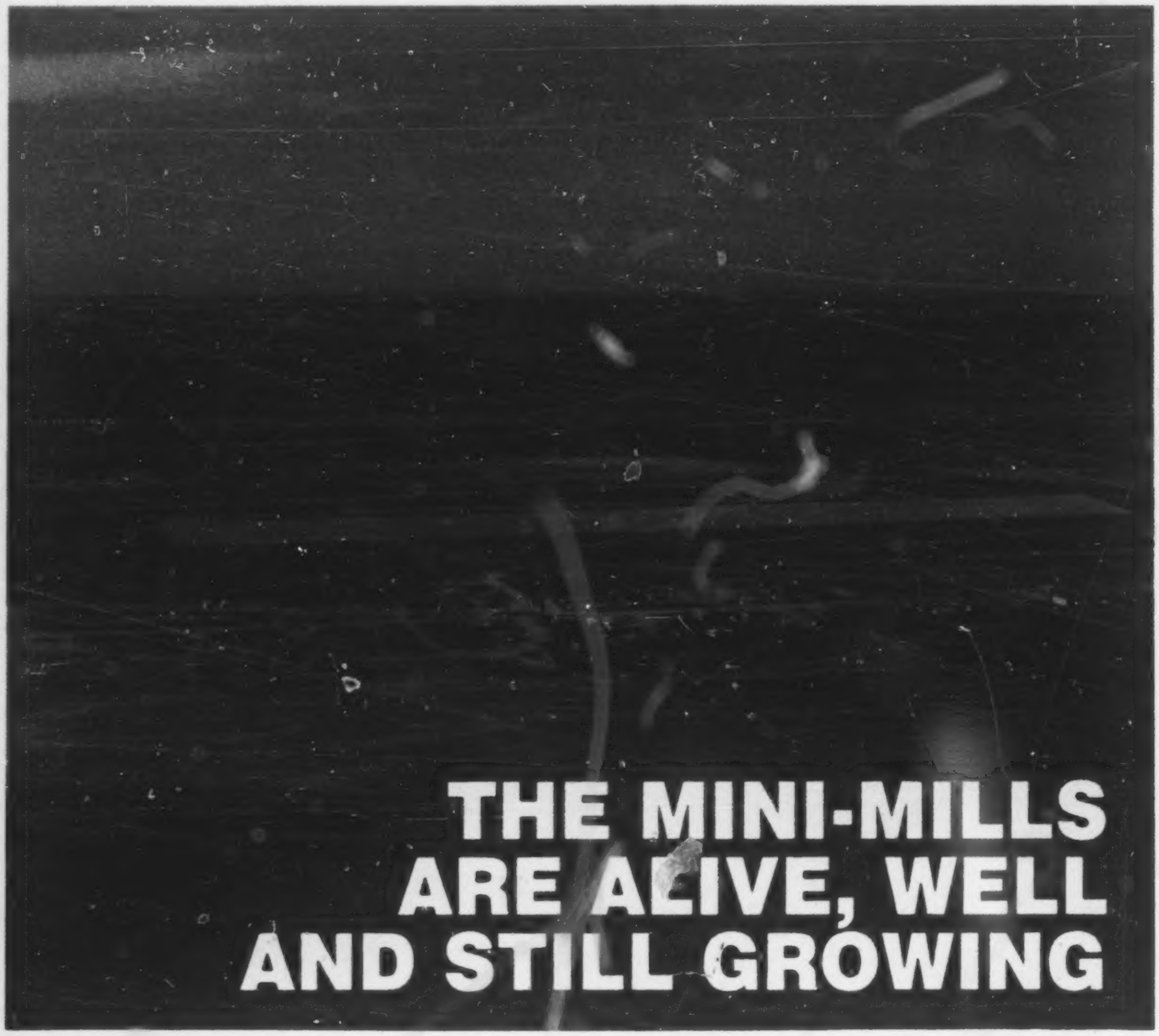


THE MINI-MILLS ARE ALIVE, WELL AND STILL GROWING

Among the newest of the new is the Nucor-Yamata structural steel mill now under construction at Blytheville, Ark.

The mini-mills are alive and well.

After nearly six years of depressed conditions, the smaller steel companies are not only enjoying brisk demand, but are back in the growth mode that best suits the industry's temperament. Rising scrap prices have done nothing to discourage optimistic predictions.

"I would expect electric furnace capacity will certainly approach 40 pct of the steel melt in the United States," said Robert A. Garvey, president, North Star Steel Co.

At the recent meeting of the Steel Bar Mills Association, assembled executives were told the electric furnace share of the steel industry would actually reach more than 50 pct by 1996.

Implications of this were noted by J.W. Brown, director of market development for Union Carbide electrode systems. "For electric furnaces to get to 50 pct," he noted, "they have to include flat products."

That doesn't deter James A. Todd, Jr., president of Birmingham Steel Corp. "We're very bullish on mini-mills in general," said Mr. Todd. "We think Ken Iverson will make thin slab casting work. We think that's going to open up some new oppportunities for mini-mills. We want to be part of that game."

F. Kenneth Iverson, chairman of Nucor Corp., is building one new mini-mill to produce sheet steel and another to make heavy structurals. As to why Nucor is making these bold moves and why Birmingham is itching to follow, the answers probably relate to momentum and dynamic individuals.

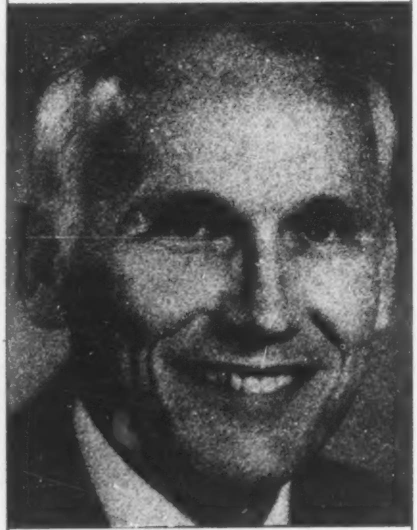
"We're very pleased with the way things have gone," said Mr. Todd, "but you can't quit once you start on this route."

Birmingham Steel's route has taken it from a standing start in 1984 to more than 1 million tons of capacity today and sales of more than $162 million in the last six months reported.

(Cont. on p. 24)

"If you start with a low enough base, it isn't hard to be the fastest growing steel company in the country," said Mr. Todd.

You can't quit running because the drives that produced past growth for Birmingham Steel and others aren't compatible with standing pat. North Star Steel, which has been acquiring companies regularly, shows no sign of resting on its oars.



'I would expect electric furnace capacity will certainly approach 40 pct of the steel melt in the United States.'

Robert A. Garvey, president, North Star Steel Co.

"As the technology for flat rolled continues to improve, you'll see mini-mills put up regional plants that supply some of the markets now supplied from long distance," said Mr. Garvey. "We continue to monitor all technology available. When it (sheet production) makes economic sense, certainly."

Boom, Boom

The happy mood of the mini-mills is partly due to the general steel revival. "Things are now the best they've been since 1974," said James Mertz, president of Calumet Steel Co. in the Chicago area.

"Things are looking better as far as the reinforcing steel market," said Ralph H. Moore, Jr., president of Owen Electric Steel Co. of South Carolina. "Most of the mini-mills are running flat out. I think the currency change had something to do with it. There's got to be less steel coming in."

There is less foreign steel coming in, and some of the surplus domestic capacity has been eliminated. "Too many people got in the business," said Mr. Mertz.

He noted that overcrowding had been relieved by some dropouts, and he cited the deletion of rebars from the product line of Bethlehem Steel. "Look at the profitable rebar business in the Northeast," he said.

Mini-mills have taken the rise in scrap prices in stride. "I see prices coming down in the next three months," said Robert M. Wilthew, president of Northwestern Steel & Wire Co. "I don't believe they're going to come down to where they were at mid-1987."

Similar comments came from Mr. Garvey of North Star Steel. "It may not go down to the distressed levels of two years ago," he said, "but I don't feel there's a problem with scrap availability. The pricing levels are such that scrap is being brought into the yards."

So far, the long-standing relationship between scrap prices and steel prices seems to be holding up. "Historically, when scrap prices are high, steel prices are high and the markets are good," said Ralph R. Boswell, vice president, steel mills, Florida Steel Corp.

"As long as we can get that increase from the buyer, we can live with it," said Mr. Wilthew of the scrap impact. "The question is how long can the steel consumer live with it before he might be in danger of greater import penetration."

In some cases, mini-mills are the consumers as well as the producers. "We're also in the fabricating business," said Mr. Moore of Owen Electric. "Those people who are locked in on fabricating contracts for a long period are being hurt."

Florida Steel fabricates rebars and is aware of the downstream squeeze, but Mr. Boswell doubts that this will open the door for foreign steel. "Foreigners are having to pay the same prices for scrap," he said. "A lot of them get it in the U.S."

In short, the mini-mills aren't inclined to panic over scrap. "If you come to the table every month to buy your requirement, eventually you're going to get your arms cut off," said Mr. Mertz. "That's not a negative thing. It's the free market."

Looking Back

This philosophical attitude possibly stems from the knowledge that the mini-mill movement has survived the ups and downs of nearly a century. The modern era began in the 1960s, but the Steel Bar Mills Association goes back 77 years.

'I see (scrap) prices coming down in the next three months, (but) I don't believe they're going down to where they were at mid-1987.'

Robert M. Wilthew, president, Northwestern Steel & Wire Co.

'Historically, when scrap prices are high, steel prices are high and the markets are good.'

Ralph R. Boswell, vice president, steel mills, Florida Steel Corp.

"It started as the rail steel association," said Oliver A. Dulle, Jr., executive vice president of the organization. "It was a handful of people who re-rolled rail."

The name was changed in the 1960s, but the association's roster still includes at least two re-rolling mills: Franklin Steel Co. in Franklin, Pa., and Chicago Heights Steel in Chicago Heights, Ill.

"We were founded in 1893," said Frank L. Corral, president of Chicago Heights Steel and new president of the Steel Bar Mills Assn. "This plant was the founding plant of Inland Steel Co."

The plant remained part of Inland until it was sold in 1969. It is now owned by private investors and is doing well. "Our order book is strong at this point in time," said Mr. Corral.

Capital Spending

While the mini-mills seem poised for fresh growth, most of them never really stopped running. "We have recently expanded our operation to a little in excess of 300,000 tons a year," said William J. Humes, Jr., executive vice president of Auburn Steel Co., Inc., and retiring president of the Steel Bar Mills Assn.

"That's from the beginning in 1976 of about 150,000 tons," said Mr. Humes. The increase came by way of improved labor productivity, plus we put in capital. Last year, we invested $10 million. In 1988, we're going to invest another $10 million.

"Most of the money is going into our rolling mill because the previous year we upgraded our melt shop. We have an excess of melting capacity."

All of Auburn's capital dollars have been generated internally. "We didn't go to the banks or to the owners," said Mr. Humes. The owners of Auburn Steel are Japanese.

Florida Steel is going ahead with a capital program that includes the continuous steelmaking process of John Vallomy. This is due for installation at the company's plant in Charlotte, N.C.

"We should place the order for the arc furnace before the end of this month," said Mr. Boswell. "We should be running in maybe 13 months." Running "quite nicely" now is the direct current furnace at the Tampa plant of Florida Steel.

"We're committed to replacing our stacker in (Jackson) Tennessee," said Mr. Boswell. "We've appropriated $6 million to replace that."

At Seattle Steel, Inc., the past few years have illustrated how resilient and durable a mini-mill can be.

Once part of Bethlehem Steel Corp., Seattle Steel was acquired by C E M Associates, Inc., in 1985. The next year, the company was

Electric Furnace Production Will Rise And So Will Demand For Scrap

Long Term Scrap/DRI Demand Forecast

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Steel Production	88.0	86.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
BOF	52.0	51.5	50.0	49.5	49.5	49.0	47.6	45.0	44.2	42.5
EAF	33.5	33.0	34.0	35.0	35.5	36.0	37.4	39.1	40.8	42.5
OH	2.5	1.5	1.0	0.5	-	-	-	-	-	-
Scrap/DRI Req.	78.6	78.3	76.2	76.8	77.1	77.5	78.5	79.7	81.0	82.2
Home Scrap	24.5	23.8	22.9	22.5	22.1	21.8	21.5	21.2	21.0	21.0
Prompt Scrap	19.6	18.9	19.2	19.6	19.8	20.0	20.3	20.5	20.7	20.9
Obsolete Scrap	34.2	35.6	33.7	34.5	34.9	35.3	36.4	37.7	39.0	40.0
DRI	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

Source: Union Carbide

'There'll Never be Another Marvin Selig'

That line appeared more than 20 years ago in an *Iron Age* story by former Technical Editor Cal Kobrin. The point being made was that no one would be able to duplicate Mr. Selig's feat of starting with nothing and building a productive steel enterprise: Structural Metals, Inc. (SMI Steel in Birmingham, Ala., was acquired later.)

The story was the first to identify mini-mills as such, but we were wrong about Marvin Selig being the last of his line. The same creative qualities have since surfaced in a number of other mini-mill entrepreneurs.

The latest display of the creative process has been at Birmingham Steel. The company was started in 1984 with none of the elements that are supposed to be essential to a succesful mini-mill.

"We did start with nothing," said James A. Todd, Jr., president of the company."We had a nine-ton furnace and a seven-ton furnace at our Birmingham mill. Up in Kankakee, we had an ingot practice shop. And we made money that year."

Birmingham has continued to make money—in growing quantities. Earnings of more than $10 million in the last six months reported were double the rate of the previous fiscal year. The company's capacity has been raised to more than 1 million tons by acquisitions of Mississippi Steel, Intercoastal Steel, Northwestern Steel Rolling Mills, and Judson Steel.

What has been the source of this growth and success? "I guess, really, our formula is people," said Mr. Todd. "Our people play hurt."

The hourly people at Birmingham Steel ignore minor discomforts because about 40 pct of their compensation comes from tonnage incentives. "If you don't work a day, you don't get any incentive pay for the whole week," said Mr. Todd. "The only excuse for not working is a death in the family."

The incentive system, which extends to operating management, makes for employee cooperation in holding down the work force. "They don't want you to add labor," said Mr. Todd.

The managers don't want assistants. Operating all non-union plants, Birmingham Steel has complete scheduling freedom. "Our people work 12-hour shifts," said Mr. Todd. "They work four days one week and three days the next. They work every other weekend but every 30 days, they get seven days off."

Some people like this trade-off, and there is general fondness for the company's level of compensation. "Our people make $35,000, $36,000 take-home pay on a gross basis plus some fringes," said Mr. Todd.

The future for Birmingham Steel is uncertain, but likely to be eventful. "We don't know where we're going tomorrow," said Mr. Todd, "but we're afraid to stop. We look at every deal that comes along.

"I don't think you can stay in commodity grades," he added. The big mini-mills will have to get into sheet, Mr. Todd feels. On the other hand, he said, only North Star and Nucor have the resources to get in the sheet business.

"We are not going to go out and bet our company on a $250 million project," he said. "But if we can find the right partner...."

Meanwhile, Marvin Selig and Structural Metals continue on a roll that should soon boost capacity to more than 1 million tons. "Our mill in Birmingham is going like gangbusters," said Mr. Selig. The mill had been Connors Steel and was scheduled for extinction before it was acquired by Structural Metals.

"Here in the Southwest we have big backlogs, but the outlook isn't that good," said Mr. Selig.

He explained that his company's plant in Seguin, Texas, was more than 650 miles from the more active markets in western Texas and southern California.

zapped by two catastrophes.

"We had a flood in our 12 in. mill due to heavy rains," said J. A. Agnello, vice president, sales and marketing. "That had the mill down for six weeks. We had 77 motors that were shorted out and had to be cleaned."

Even after the cleanup, there were spot failures. "The mill didn't run very well for almost a full quarter," said Mr. Agnello.

"Then in March," he continued, "we had a ladle spill. Here was a brand new caster, and 80 tons of hot metal came down. There was over $1 million damage. We had just changed our insurance to $1 million deductible."

These experiences convinced the company that a strong operating man was needed. In late 1986, J.R. Powers was brought in from Slater Steels. As president, Mr. Powers was able to get the company running smoothly.

"Jim's not a hatchet man," said Mr. Agnello. "He spent a lot of time investigating the situation. Then he made some significant changes throughout the operating side of the business. They were good moves."

Also good is the West Coast market. "We've been running full on rebars," said Mr. Agnello. In addition to producing standard products from continuously cast billets, Seattle Steel has been able to carve out some nice market niches for special shapes made from ingots.

Surprisingly good is demand for steel in the Southwest. Houston and Dallas are still feeling the effects of the oil country lag, but other areas are booming.

"The Southwest is still growing," said Arthur W. Lupia, president, Border Steel Mills, Inc., El Paso, Texas. "We're looking at expanding 50 pct." In addition, Border Steel has acquired a number of rebar fabricating operations.

"We've become the largest mill fabricator in the Southwest," said Mr. Lupia. The amount of attrition in this field has made fabrication attractive again, he indicated.

By George J. McManus

MATERIALS PRICES

PRICE & PRODUCTION DATA

(Effective March 7, 1988)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	284	285	257	180
Pittsburgh	194	208	202	183
Youngstown	122	125	120	121
Lake Erie	167	165	159	123
Detroit	172	164	159	148
Chicago	518	539	501	410
Midwest	197	195	183	187
Southern	221	223	213	170
Western	97	98	81	48
U.S. Production	1,971	2,002	1,875	1,570

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse re 80c premium.

Pellets (per iron unit natural)	gross-ton 37.344*
Pellets (per iron unit natural)	gross-ton 58.0-59.4**
Pellets (per iron unit natural)	gross-ton 72.45-86.9***
Mesabi, regular-unscreened	gross-ton 32.53
Mesabi, non-bessemer	gross-ton 30.03-31.53

*37.344c—U.S. Steel, 5-20-87, FOB Mount Iron, Minn. **58.0c—Mineral Services, 8-13-85. **59.4c—Inland Steel Mining, 1-1-85, Pickands Mather, 8-1-85, delivered hold of vessel, upper Lake ports. ***72.45c, Cleveland-Cliffs, 12-30-86, Oglebay Norton, 3-1-87, 86.9c—Hanna Mining, 2-26-82

STEEL PRODUCTION, COMPOSITE PRICES

(Effective March 7, 1988)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1988	To Date 1987
Net tons, in thousands	1,971	2,002	17,769	12,837
Capability Utilization Rate	91.8	93.1	89.1	64.9

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 1/3/88)	24.223	24.223	24.223	25.236
Pig Iron** (Net ton=2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 111.83	$ 112.17	$ 113.17	$ 74.83
No. 2 bundles	$ 75.50	$ 75.50	$ 73.83	$ 50.50

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 120.50	$ 120.50	$ 123.50	$ 79.50
No. 1 steel, Philadelphia	98.50	98.50	98.50	70.50
No. 1 steel, Chicago	116.50	117.50	117.50	74.50
No. 1 bundles, Detroit	135.50	138.50	138.50	76.50
Low Phos., Youngstown	130.50	130.50	130.50	80.50
No. 1 mach'y cast., Pgh	102.50	102.50	102.50	74.50
No. 1 mach'y cast., Phila	111.50	111.50	111.50	93.50
No. 1 mach'y cast., Chi	134.50	134.50	120.50	95.50

*Finished Steel Composite. Weighted index of steel bars, structurals, plates, rails, hot rolled and cold rolled sheets.

**Pig Iron Composite. Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite. Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective March 7, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	95.45	94.85	3/7/88
Copper (C)	108.00	94.00	3/7/88
Lead	34.00	37.00	2/8/88
Magnesium Ingot	153.00	148.00	12/9/85
Nickel (LME)	474.00	436.00	3/7/88
Zinc	47.00	46.00	2/29/88

ALUMINUM: Avg. for last week & previous week. COPPER (C)=cathode. LEAD: common grade. MAGNESIUM: 99.8% pig delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$248.00
Beryllium-copper, per lb. cont. Be	$152.00
Beryllium 97% powder 200	$196.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz.	$435.90
Indium, per troy oz.	$9.95
Iridium, per troy oz.	$335.00
Magnesium sticks, 10,000 lbs.	$2.12
Mercury, per 76-lb., f.o.b. N.Y.	$348.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz.	$120.00
Platinum, per troy oz.	$479.00
Rhodium, per troy oz.	$1,245.00
Silver ingots, per troy oz.	$6.39
Titanium sponge, melt grade	$4.00
Tungsten powder, hyd red	$9.53-9.85
Vanadium	$6.00
Zirconium sponge	$11.20-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

Feb. 29—306.00
Mar. 1—304.00
Mar. 2—306.00
Mar. 3—307.00
Mar. 4—307.00

Scrap Prices
Brass Mill Scrap

(Cents per lb.; over 20,000 lbs. add 1¢ per lb.)

	Solids	Turnings
Copper	78	73
Yellow brass	68½	67½
Red brass	64½	60½
Comm. bronze	65	60
Mang. bronze	48	47
Free cutting rod ends	61½	60½

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	76
No. 2 copper wire	66
Light copper	60

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	67
No. 2 copper wire	58
Light copper	51
No. 1 composition	52
No. 1 comp. turnings	52
Hvy. yellow brass solids	38
Hvy. yellow brass turnings	32
Radiators	35

Aluminum		
New mixed clips	60	— 61
Old sheet	50	— 51
Old cast	52	— 53
Clean dry borings	46	— 47

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	54	— 55
Mixed L.C. clips	53	— 54
Old sheets and cast	45	— 46
Borings and turnings	38	— 39
Duraluminum clippings	46	— 47

Copper and Brass		
No. 1 copper wire	63	— 65
No. 2 copper wire	53	— 54
Light copper	47	— 48
Radiators	36	— 37
No. 1 composition	52	— 53
No. 1 composition turnings	48	— 49
Cocks and faucets	44	— 45
Clean heavy yellow brass	40	— 41
Brass pipe	46	— 47
New soft brass clippings	58	— 59

Lead		
Heavy soft lead	12	— 13
Whole batteries	2	— 3
Type metal	21	— 22
Electrotype	13	— 14

Nickel		
Nickel solids	240	—250
Nickel rod ends	233	—243
Nickel sheets, clips	233	—243
Nickel turnings	109	—119

Zinc		
New zinc clippings	18	— 19
Old diecast zinc	14	— 15

EFFECTIVE MARCH 7, 1988

(Effective March 7, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 120.00	to	$ 121.00
No. 2 hvy. melting	110.00	to	111.00
No. 1 dealer bundles	154.00	to	155.00
No. 1 factory bundles (auto)	160.00	to	161.00
No. 2 bundles	74.00	to	75.00
No. 1 busheling	157.00	to	158.00
Machine shop turnings	23.00	to	24.00
Shoveling turnings	69.00	to	70.00
Cast iron borings	68.00	to	69.00
Low phos. punchings plate	162.00	to	163.00
Heavy turnings	110.00	to	111.00
No. 1 RR hvy. melting	137.00	to	138.00
Rails, 2 ft. and under	168.00	to	169.00
Scrap rails, random lgth	150.00	to	151.00
RR specialties	161.00	to	162.00
No. 1 machinery cast	102.00	to	103.00
Cupola cast	94.00	to	95.00
Heavy breakable cast	40.00	to	41.00
Stainless			
18-8 bundles and solids	940.00	to	950.00
18-8 turnings	840.00	to	850.00

Chicago

No. 1 hvy. melting	$ 116.00	to	$ 117.00
No. 2 hvy. melting	112.00	to	113.00
No. 1 dealer bundles	143.00	to	144.00
No. 1 factory bundles (auto)	148.00	to	149.00
No. 2 dealer bundles	85.00	to	86.00
No. 1 busheling	139.00	to	140.00
Shredder scrap	137.00	to	138.00
Machine shop turnings	55.00	to	56.00
Mixed borings and turnings	47.00	to	48.00
Shoveling turnings	64.00	to	65.00
Cast iron borings	69.00	to	70.00
Low phos. forge crop	164.00	to	165.00
Low phos. punchings plate 1/4 in. and heavier	180.00	to	181.00
Low phos. 2 ft. and under	175.00	to	176.00
No. 1 RR hvy. melting	136.00	to	137.00
Scrap rails random lgth	145.00	to	146.00
Reroller rails	159.00	to	160.00
Rails, 2 ft. and under	173.00	to	174.00
RR couplers and knuckles	139.00	to	140.00
RR car axles	164.00	to	165.00
No. 1 machinery cast	134.00	to	135.00
Cupola cast	114.00	to	115.00
Stove plate	134.00	to	135.00
Steel car wheels	159.00	to	160.00
Stainless			
18-8 bundles and solids	910.00	to	920.00
18-8 turnings	790.00	to	800.00
430 bundles and solids	210.00	to	220.00
430 turnings	125.00	to	135.00

Philadelphia

No. 1 hvy. melting	$ 97.00	to	$ 100.00
No. 2 hvy. melting	87.00	to	90.00
No. 1 dealer bundles	142.00	to	145.00
No. 2 dealer bundles	65.00	to	68.00
No. 1 busheling	130.00	to	133.00
Shredder scrap	125.00	to	128.00
Machine shop turnings	29.00	to	32.00
Mixed borings and turnings	29.00	to	32.00
Shoveling turnings	50.00	to	53.00
Low phos. 5 ft. and under	120.00	to	123.00
Low phos. 2 ft. punchings	145.00	to	148.00
Electric furnace bundles	146.00	to	149.00
RR specialties	124.00	to	127.00
Rails, 2 ft. and under	145.00	to	148.00
Cupola cast	102.00	to	105.00
Heavy breakable cast	52.00	to	55.00
No. 1 machinery cast	110.00	to	113.00

Detroit

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 84.00	to	$ 85.00
No. 2 hvy. melting	82.00	to	83.00
No. 1 dealer bundles	135.00	to	136.00
No. 2 bundles	59.00	to	60.00
No. 1 busheling	133.00	to	134.00
Drop forge flashings	83.00	to	84.00
Machine shop turnings	53.00	to	54.00
Mixed borings and turnings	25.00	to	26.00
Shoveling turnings	53.00	to	54.00
Cast iron borings	59.00	to	60.00
Heavy breakable cast	45.00	to	46.00
Mixed cupola cast	62.00	to	63.00
Automobile cast	84.00	to	85.00
Stainless			
18-8 bundles and solids	920.00	to	930.00
18-8 turnings	665.00	to	675.00
430 bundles and solids	215.00	to	225.00

Youngstown

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 105.00	to	$ 106.00
No. 2 hvy. melting	94.00	to	95.00
No. 1 dealer bundles	138.00	to	139.00
No. 2 dealer bundles	62.00	to	63.00
Machine shop turniogs	45.00	to	46.00
Shoveling turnings	45.00	to	46.00
Low phos. plate	130.00	to	131.00
Electric furnace bundles	134.00	to	135.00
Galvanized bundles	132.00	to	133.00

Cleveland

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 100.00	to	$ 101.00
No. 2 hvy. melting	89.00	to	90.00
No. 1 dealer bundles	138.00	to	139.00
No. 1 factory bundles	139.00	to	140.00
No. 2 bundles	58.00	to	59.00
No. 1 busheling	135.00	to	136.00
Machine shop turnings	50.00	to	51.00
Shoveling turnings	50.00	to	51.00
Cast iron borings	50.00	to	51.00
Cut structural & plates, 5 ft. and under	119.00	to	120.00
Cut structural & plates, 2 ft. and under	142.00	to	143.00
Low phos. punchings plate	145.00	to	146.00
Foundry steel, 2 ft. & under	92.00	to	93.00
No. 1 RR hvy. melting	112.00	to	113.00
Rails, 2 ft. and under	154.00	to	155.00
Rails, 18 in. and under	156.00	to	157.00
No. 1 machinery cast	90.00	to	91.00
Mixed cast	55.00	to	56.00
Stainless			
18-8 bundles	925.00	to	935.00
18-8 turnings	670.00	to	680.00
430 bundles	220.00	to	230.00

Buffalo

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 95.00	to	$ 96.00
No. 2 hvy. melting	87.00	to	88.00
No. 1 busheling	135.00	to	136.00
No. 1 dealer bundles	135.00	to	136.00
No. 2 bundles	48.00	to	49.00
Machine shop turnings	28.00	to	29.00
Mixed borings and turnings	28.00	to	29.00
Shoveling turnings	34.00	to	35.00
Cast iron borings	37.00	to	38.00
Low phos. plate	134.00	to	135.00
Structural and plate, 2 ft. and under	139.00	to	140.00
Rails, 2 ft. and under	141.00	to	142.00
Scrap rails, random lgth	114.00	to	115.00
No. 1 machinery cast	104.00	to	105.00
No. 1 cupola cast	87.00	to	88.00

St. Louis

No. 1 hvy. melting	$ 114.00	to	$ 115.00
No. 2 hvy. melting	93.00	to	94.00
No. 1 busheling	137.00	to	138.00
No. 1 dealer bundles	141.00	to	142.00
No. 2 bundles	94.00	to	95.00
Machine shop turnings	49.00	to	50.00
Shoveling turnings	53.00	to	54.00
Cast iron borings	57.00	to	58.00
No. 1 RR hvy. melting	134.00	to	135.00
Rails, random length	118.00	to	119.00
Rails, 5 ft. and under	139.00	to	140.00
Plate and structural, 5 ft. and under	134.00	to	135.00
Cupola cast	89.00	to	90.00
Heavy breakable cast	43.00	to	44.00
Stove plate	112.00	to	113.00
Steel car wheels	139.00	to	140.00
Rerolling rails	130.00	to	131.00
Unstripped motor blocks	66.00	to	67.00

Birmingham

No. 1 hvy. melting	$ 104.00	to	$ 105.00
No. 2 hvy. melting	100.00	to	101.00
No. 1 dealer bundles	110.00	to	111.00
No. 2 bundles	84.00	to	85.00
No. 1 busheling	102.00	to	103.00
Shredder scrap	132.00	to	133.00
Machine shop turnings	46.00	to	47.00
Shoveling turnings	59.00	to	60.00
Cast iron borings	38.00	to	39.00
Electric furnace bundles	89.00	to	90.00
Elec. furnace, 3 ft. & under	104.00	to	105.00
Structural and plate, 2 ft.	149.00	to	150.00
Structural and plate, 4 ft.	138.00	to	139.00
No. 1 RR hvy. melting	138.00	to	139.00
Scrap rails, random lgth	129.00	to	130.00
Rails, 2 ft. and under	155.00	to	156.00
Angles and splice bars	138.00	to	139.00
No. 1 cupola cast	110.00	to	111.00
Unstripped motor blocks	99.00	to	100.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 99.00	to	$ 100.00
No. 2 hvy. melting	89.00	to	90.00
No. 1 dealer bundles	130.00	to	131.00
No. 2 bundles	69.00	to	70.00
No. 1 busheling	130.00	to	131.00
Machine shop turnings	30.00	to	31.00
Shoveling turnings	40.00	to	41.00
Cast iron borings	43.00	to	44.00
Low phos. 18 in. and under	138.00	to	139.00
Rails, random length	122.00	to	123.00
Rails, 2 ft. and under	138.00	to	139.00
No. 1 cupola cast	99.00	to	100.00
Heavy breakable cast	59.00	to	60.00
Drop broken cast	113.00	to	114.00

New York

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 67.00	to	$ 69.00
No. 2 hvy. melting	59.00	to	60.00
No. 2 dealer bundles	35.00	to	37.00
Mixed borings and turnings	10.00	to	11.00
Shoveling turnings	10.00	to	12.00
Clean cast, chem. borings	37.00	to	38.00
No. 1 machinery cast	80.00	to	81.00
Mixed yard cast	53.00	to	54.00
Heavy breakable cast	17.00	to	19.00
Stainless			
18-8 prepared solids	690.00	to	710.00
18-8 turnings	430.00	to	450.00
430 prepared solids	120.00	to	130.00
430 solids	135.00	to	145.00

Boston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 70.00	to	$ 72.00
No. 2 hvy. melting	60.00	to	62.00
No. 1 dealer bundles	88.00	to	90.00
No. 2 bundles	33.00	to	35.00
No. 1 busheling	83.00	to	85.00
Shredder scrap	78.00	to	80.00
Machine shop turnings	18.00	to	20.00
Shoveling turnings	23.00	to	25.00
No. 1 machinery cast	85.00	to	87.00
Mixed cupola cast	44.00	to	46.00
Heavy breakable cast	22.00	to	24.00

San Francisco

No. 1 hvy. melting	$ 66.00	to	$ 68.00
No. 2 hvy. melting	60.00	to	62.00
No. 1 dealer bundles	58.00	to	60.00
No. 2 dealer bundles	46.00	to	47.00
Machine shop turnings	15.00	to	16.00
Cast iron borings	15.00	to	16.00
No. 1 cupola cast	87.00	to	89.00

Los Angeles

No. 1 hvy. melting	$ 63.00	to	$ 65.00
No. 2 hvy. melting	57.00	to	59.00
No. 1 dealer bundles	55.00	to	57.00
No. 2 dealer bundles	42.00	to	44.00
Machine shop turnings	12.00	to	13.00
Shoveling turnings	13.00	to	14.00
Cast iron borings	13.00	to	14.00
Elec. furnace, 1 ft. and under (foundry)	80.00	to	82.00
No. 1 cupola cast	84.00	to	86.00

Seattle

No. 1 hvy. melting	$ 94.00	to	$ 95.00
No. 2 hvy. melting	84.00	to	85.00
No. 2 bundles	69.00	to	70.00
No. 1 cupola cast	99.00	to	100.00
Mixed yard cast	85.00	to	87.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 103.00
No. 2 hvy. melting, cut 2 ft. and under	95.00
No. 1 dealer bundles	128.00
No. 2 bundles	79.00
Mixed steel scrap	75.00
Bush. new fact. prep'd	123.00
Bush. new fact. unprep'd	99.00
Machine shop turnings	31.00
Short steel turnings	31.00
Mixed borings and turning	25.00
Cast scrap	102.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 104.00	to	$ 105.00
No. 2 hvy. melting	94.00	to	95.00
No. 2 bundles	57.00	to	58.00
Machine shop turnings	42.00	to	43.00
Crushed turnings	52.00	to	53.00
Shredder scrap	115.00	to	116.00
Cut structural plate, 2 ft. and under	130.00	to	131.00
Cut structural plate, 5 ft. and under	120.00	to	121.00
Unstripped motor blocks	60.00	to	61.00
Cupola cast	95.00	to	96.00

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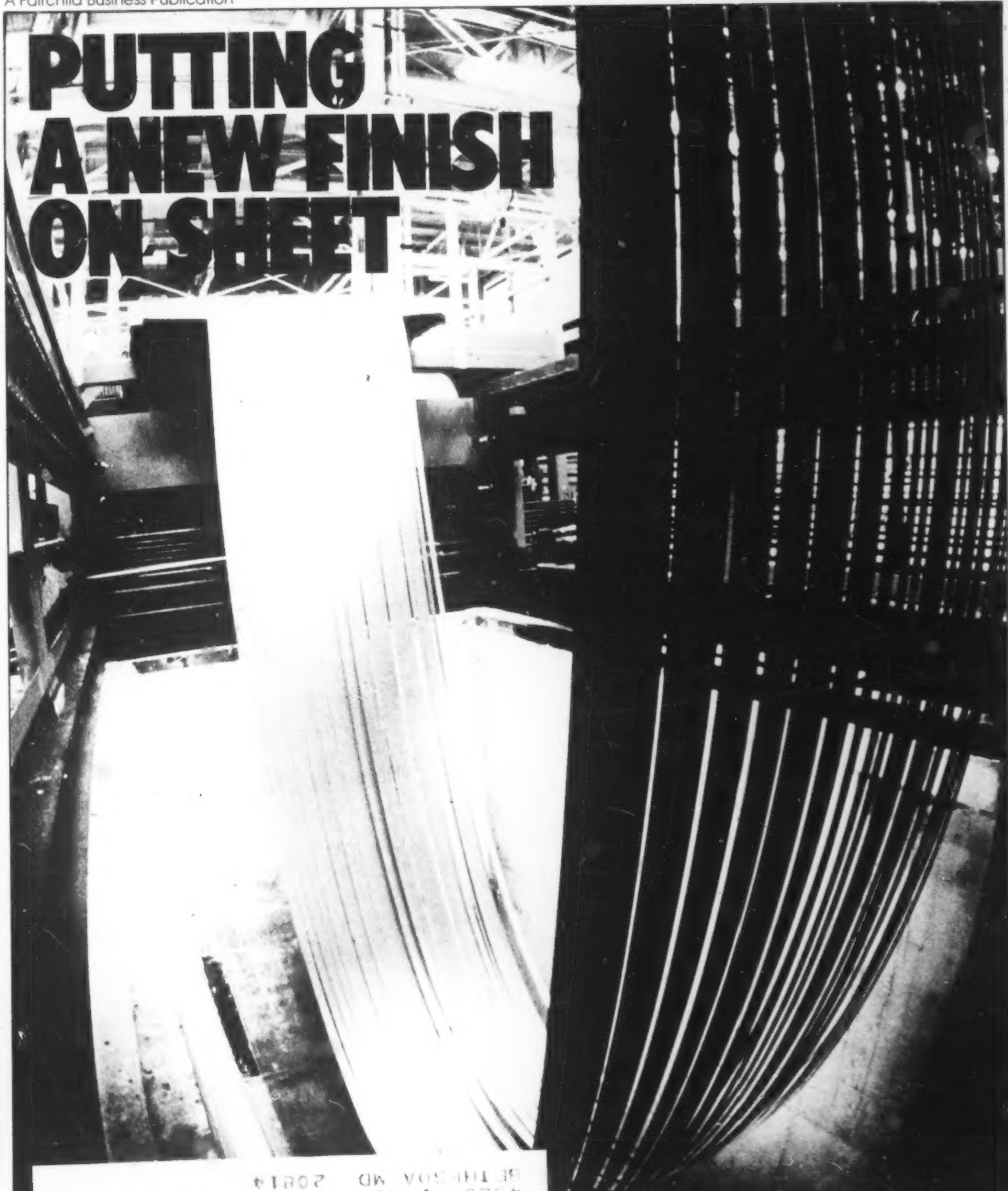
IRON AGE

THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

A Fairchild Business Publication
MAY 1988



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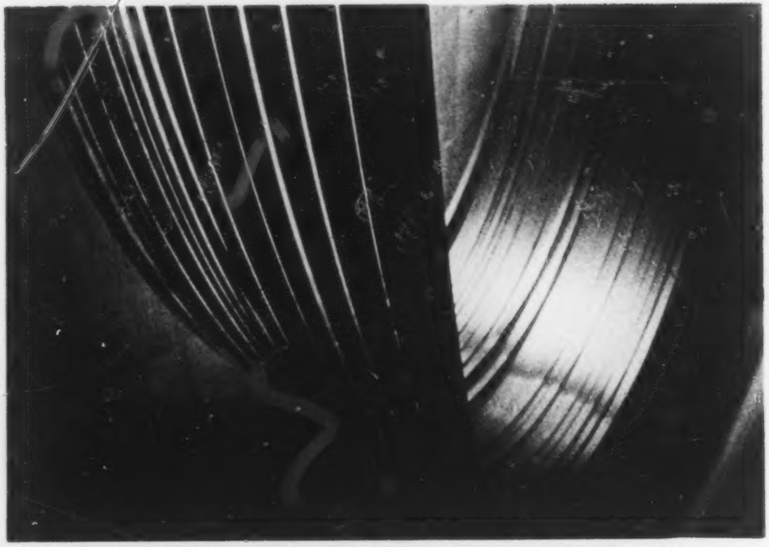
IRON AGE

MAY 1988



Newly slit sheet steel gathers in a looping pit at Ryerson's Chicago plant.

Putting A New Finish On Sheet P. 15
More and more, steelmakers are looking to outside processors to put the final touches on sheet.

EDITORIAL

Is 'comparable worth' worth worrying about?—*P.3*

NEWSWATCH

Now, steel companies are buying steelmaking facilities.—*P.7*

STAINLESS STEEL

Washington Steel puts a part of the profits in the paychecks.—*p. 27*

ALUMINUM

Alcoa brings some new equipment onstream at its Warrick plant.—*P.33*

BRITISH STEEL

The big European steelmaker may soon be back in private hands.—*P.34*

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Domestic steel producers are looking forward to a busy summer.—*P.41*

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Big steelmakers get back to the job they do best—making steel.—*P.48*

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BPA

Manufacturing industries plan to boost capital spending in 1988 by 9.8 pct, the survey said. The durable goods industries expect a 6.8 pct increase, with blast furnaces, steel works and nonferrous metals producers planning the heftiest increases.

Overall, primary metals producers intend to raise their capital outlays by 15.1 pct this year. Steelmakers expect to up their spending by 17.8 pct and nonferrous metals producers are planning a 16.9 pct rise, the survey said.

Electrical machinery, fabricated metals and "other durables" plan on spending increases of 10 pct or higher this year. Smaller rises are expected in machinery, except electrical, stone-clay-glass and aircraft. A spending decline of nearly 5 pct is planned in automobiles.

If the total 8.8 pct spending hike is realized, it would be the largest upswing since a 9.6 pct leap in 1985, when real spending on capital goods reached $392.5 billion, the bureau said.

Spending for new plants in current dollars fell 0.9 pct last year, the report said, while spending for new equipment rose 3.9 pct.

The estimates are calculated quarterly from survey information based on inflation-adjusted dollars.

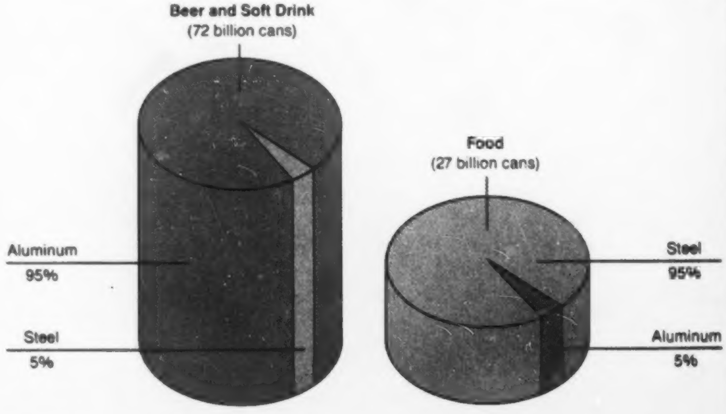
A previous Bureau of Economic Analysis survey released in December projected a 7.3 pct rise in capital spending in 1988. The new survey, conducted in January through March, projects a 2.8 pct capital spending hike in the first quarter of 1988 and a 0.9 pct increase in the second quarter.

"The year-to-year increase indicated in the latest survey is larger than that reported in the previous survey," the bureau said, "not only because 1988 planned spending was revised up, but also because 1987 actual spending was lower than planned."

Manufacturers are expecting a 5.4 pct spending increase in the first quarter of 1988, a 0.2 pct increase in the second quarter followed by a 2 pct decline from the first six months of 1988 to the last.

Alcoa claims a bigger serving of the food can market

1986 U.S. Metal Can Shipments — Aluminum vs. Steel



The nation's newest canmaker may be providing the aluminum industry with the wider footing in the processed food can market that it has long desired.

Silgan Containers Corp. is operating what may be the most modern of canmaking plants in Fort Dodge, Iowa, in the heart of the nation's pantry, 70 miles northwest of Des Moines. The 50,000 sq ft plant cost about $14 million to build, employs about 85 workers (including office staff), but has the capacity to produce more than 1 billion cans and ends a year.

Output includes three-ounce and six-ounce cans as well as easy-open ends for six-ounce containers. Currently, all of the production from the Fort Dodge plant is shipped to the Friskies Pet Care Division of Carnation Co. And all of the product is drawn and redrawn from aluminum sheet, much of it supplied by the Aluminum Co. of America (Alcoa).

The food can market is the latest battleground where steel and aluminum are contesting for the hearts, minds and materials requirements of metalworking industries.

The aluminum industry supplies about 95 pct of the metal for the beverage can market—estimated at about 78 billion cans a year. Steel, on the other hand, has the lion's share of the 27 billion cans-a-year food market and aluminum holds only about 5 pct of the nation's canned foods.

If the current efforts of both Reynolds Metals Co. and Alcoa are any indication, they would like a large serving, please.

Now, thanks to Silgan, Alcoa has a bit more on its plate.

The Fort Dodge facility was part of the Carnation Can Division when ground was broken in October 1986. The following year, Carnation decided to quit the canmaking business. Two former Continental Can Co. executives, Phil Silver and Greg Horrigan, obtained financing from the New York investment bank, Morgan Stanley, to buy the canmaking facilities. Silver was a former president of Continental Can; Horrigan was its executive vice president.

By September the purchase was completed and a new company, initially called Canaco Corp., was established to run the 13 canmaking plants that were once part of Carnation. The company name's was later changed to Silgan Containers Corp., an amalgamation of the two founders' last names.

James D. Beam, the company's

vice president of marketing and sales, says Silgan now is the second largest merchant canmaker in the U.S., though the company is less than a year old.

While still part of Carnation, the canmaking division initiated a program with Alcoa to develop a convenience package for its pet foods. Carnation's Friskies Pet Care Div. wanted to introduce its new Mighty Dog product to the market in a 307x111 (six-ounce) aluminum easy-open can.

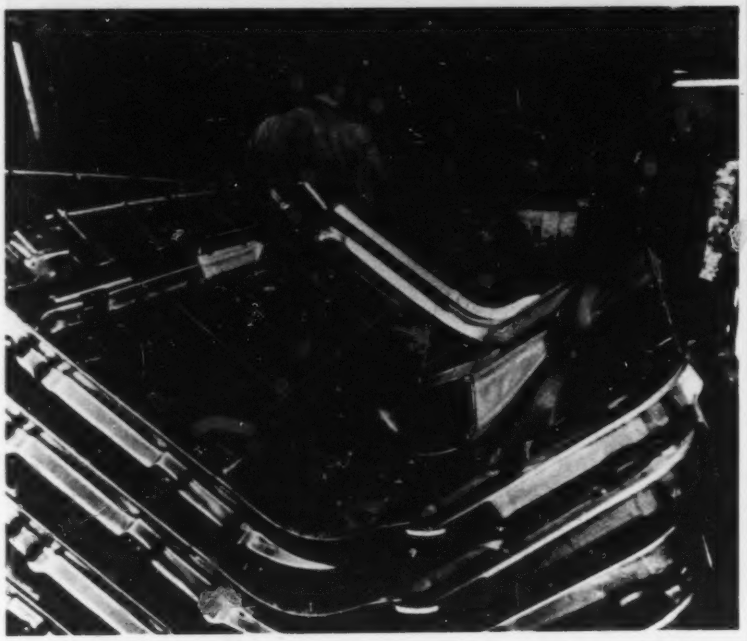
Alcoa now supplies most, if not all, of the material to the Fort Dodge facility. Much of the metal is produced at the big aluminum producer's Warrick, Ind., plant.

It's not certain that Mighty Dog's success in the pet food market stems entirely from the easy-open aluminum containers. Aluminum industry marketers, nevertheless, contend it is a sign that pet owners are ready for an easy-open can. They note that many pet owners feel they need at least two can openers in the kitchen—one for the family and one for Fido.

Carnation now packages both Mighty Dog and its Fancy Feast cat food in easy-open aluminum cans and reportedly plans to widen its usage of convenience packaging.

The big food processor's action has created a tremendous interest in convenience packaging throughout the food industry, said Mr. Beam.

There's an equally keen interest in the aluminum industry. Aluminum marketers see the 27 billion-cans-a-year food market as ripe for the picking.



World-class stamping plants now produce fenders and doors in three or four press operations, compared to six or eight a few years ago.

Automakers cut steel costs by improving stamping operations

U.S. automakers are making improvements in stamping efficiency that could cut $350-400 from the cost of the automotive steel structure, or body-in-white, according to a study sponsored by the American Iron and Steel Institute (AISI).

As automakers cut stamping costs, the tooling cost of automotive steel are becoming more competitive with those of plastic. Until recently, automakers usually assumed that a chief advantage of plastic over steel is its lower tooling cost.

The stamping study is being directed by Donald N. Smith, director of the Industrial Development Division based at the University of Michigan. Mr. Smith is working with the task force on tooling initiated by the AISI-sponsored Auto/Steel Partnership Program. "What started out as a steel vs. plastic study has really become redirected more toward enhancing steel panel productivity," explained Mr. Smith.

Based on an extensive study of automotive stamping plants in the U.S. and abroad, Mr. Smith has identified the key principles of a world class stamping plant.

"The single most important way to improve stamping efficiency is to limit the number of press operations," Mr. Smith told *Iron Age*. "World-class stamping plants now produce fenders and doors in as few as three or four press operations, compared to between six and eight just a few years ago."

To cut stamping operation, some automakers have redesigned complex panels into simpler shapes that can be formed by just two tandem presses, for example. Double-attaching two parts on one blank, that is, designing the shape so that two parts can be stamped with one blow of the press, is another tremendous booster of efficiency.

"You can eliminate 40 pct of the presses on a press line by using double-attaching," explained Mr. Smith. Honda's Marysville, Ohio, auto plant, for example, simultaneously stamps two doors from one blank.

General Motors' Lansing, Mich., plant uses only four press operations for some outer panels of the Buick Reatta.

"Three quarters of the tooling costs are already cast in concrete before the tool designers even get their hands on them," said Mr. Smith.

The best automakers are remedying this problem by using simul-

MATERIALS PRICES

PRICE & PRODUCTION DATA

(Effective April 4, 1988)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	289	291	284	196
Pittsburgh	195	204	194	194
Youngstown	112	124	122	116
Lake Erie	153	163	167	121
Detroit	168	174	172	154
Chicago	546	535	518	453
Midwest	183	177	197	194
Southern	223	225	221	170
Western	103	103	97	52
U.S. Production	1,972	1,996	1,971	1,650

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 37.344*
Pellets (per iron unit natural)	gross-ton 58.0-59.4**
Pellets (per iron unit natural)	gross-ton 72.45-86.9***
Mesabi, regular-unscreened	gross-ton 32.53
Mesabi, non-bessemer	gross-ton 30.03-31.53

*37.344¢—U.S. Steel, 5/20/87, FOB Mount Iron, Minn. **58.0¢—Mineral Services, 8/13/85. **59.4¢—Inland Steel Mining, 1/1/85; Pickands Mather, 8/1/85, delivered hold of vessel, upper Lake ports. ***72.45¢—Cleveland-Cliffs, 12/30/86; Oglebay Norton, 3/1/87. 86.9¢—Hanna Mining, 2/26/82.

STEEL PRODUCTION, COMPOSITE PRICES

(Effective April 4, 1988)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1988	To Date 1987
Net tons, in thousands	1,972	1,996	25,697	19,468
Capability Utilization Rate	92.0	93.0	90.1	68.8

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 4/3/88)	24.333	24.223	24.223	25.236
Pig Iron** (Net ton= 2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 108.83	$ 109.50	$ 111.83	$ 73.17
No. 2 bundles	$ 73.83	$ 73.83	$ 75.50	$ 49.83

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 112.50	$ 115.50	$ 120.50	$ 76.50
No. 1 steel, Philadelphia	96.50	96.50	98.50	70.50
No. 1 steel, Chicago	117.50	116.50	116.50	72.50
No. 1 bundles, Detroit	127.50	131.50	135.50	66.50
Low Phos., Youngstown	128.50	128.50	130.50	75.50
No. 1 mach'y cast., Pgh	100.50	100.50	102.50	74.50
No. 1 mach'y cast., Phila	111.50	111.50	111.50	93.50
No. 1 mach'y cast., Chi	134.50	134.50	134.50	93.50

*Finished Steel Composite: Weighted index of steel bars, structurals, plates, rails, hot rolled and cold rolled sheets.
**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.
***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective April 4, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	113.00	108.00	3/31/88
Copper (C)	115.00	109.00	3/31/88
Lead	34.00	37.00	2/8/88
Magnesium ingot	153.00	148.00	12/9/85
Nickel (LME)	705.00	803.00	3/31/88
Zinc	52.00	50.00	3/29/88

ALUMINUM: Avg. for last week & previous week. COPPER (C)=cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$260.00
Beryllium-copper strip No. 25, per lb.Be	$8.00
Beryllium powder SP200F, per lb.	$244.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz.	$457.28
Indium, per troy oz.	$9.95
Iridium, per troy oz.	$325.00
Magnesium sticks, 10,000 lbs.	$2.12
Mercury, per 76-lb., f.o.b. N.Y.	$345.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz.	$126.00
Platinum, per troy oz.	$539.00
Rhodium, per troy oz.	$1,240.00
Silver ingots, per troy oz.	$6.83
Titanium sponge, melt grade	$4.00
Tungsten powder, hyd red.	$9.53-9.85
Vanadium	$6.00
Zirconium sponge	$11.20-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

Mar. 28—304.00
Mar. 29—304.00
Mar. 30—303.00
Mar. 31—302.00
Apr. 1—302.00

Scrap Prices

Brass Mill Scrap

(Cents per lb.; over 20,000 lbs. add 1¢ per lb.)

	Solids	Turnings
Copper	83	78
Yellow brass	71½	70½
Red brass	66½	62½
Comm. bronze	68	63
Mang. bronze	48	47
Free cutting rod ends	63½	62½

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	81
No. 2 copper wire	71
Light copper	65

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	72
No. 2 copper wire	63
Light copper	56
No. 1 composition	55
No. 1 comp. turnings	55
Hvy. yellow brass solids	40
Hvy. yellow brass turnings	34
Radiators	37

Aluminum

New mixed dips	66 — 67
Old sheet	55 — 56
Old cast	57 — 58
Clean dry borings	47 — 48

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated dippings	58 — 59
Mixed L.C. dips	57 — 58
Old sheets and cast	48 — 49
Borings and turnings	40 — 41
Duraluminum dippings	49 — 50

Copper and Brass

No. 1 copper wire	68 — 70
No. 2 copper wire	58 — 59
Light copper	52 — 53
Radiators	37 — 38
No. 1 composition	56 — 57
No. 1 composition turnings	52 — 53
Cocks and faucets	46 — 47
Clean heavy yellow brass	42 — 43
Brass pipe	50 — 51
New soft brass dippings	62 — 63

Lead

Heavy soft lead	12 — 13
Whole batteries	2 — 3
Type metal	21 — 22
Electrotype	13 — 14

Nickel

Nickel solids	350 —360
Nickel rod ends	343 —353
Nickel sheets, dips	343 —353
Nickel turnings	179 —199

Zinc

New zinc dippings	18 — 19
Old diecast zinc	14 — 15

EFFECTIVE APRIL 4, 1988

(Effective April 4, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 112.00 to	$ 113.00
No. 2 hvy. melting	102.00 to	103.00
No. 1 dealer bundles	141.00 to	142.00
No. 1 factory bundles (auto)	150.00 to	151.00
No. 2 bundles	69.00 to	70.00
No. 1 busheling	141.00 to	142.00
Machine shop turnings	23.00 to	24.00
Shoveling turnings	69.00 to	70.00
Cast iron borings	68.00 to	69.00
Low phos. punchings plate	152.00 to	153.00
Heavy turnings	102.00 to	103.00
No. 1 RR hvy. melting	131.00 to	132.00
Rails, 2 ft. and under	166.00 to	167.00
Scrap rails, random lgth.	146.00 to	147.00
RR specialties	151.00 to	152.00
No. 1 machinery cast	100.00 to	101.00
Cupola cast	92.00 to	93.00
Heavy breakable cast	40.00 to	41.00
Stainless		
18-8 bundles and solids	1,190.00 to	1,200.00
18-8 turnings	1,090.00 to	1,100.00

Chicago

No. 1 hvy. melting	$ 117.00 to	$ 118.00
No. 2 hvy. melting	112.00 to	113.00
No. 1 dealer bundles	133.00 to	134.00
No. 1 factory bundles (auto)	134.00 to	135.00
No. 2 dealer bundles	85.00 to	86.00
No. 1 busheling	131.00 to	132.00
Shredder scrap	130.00 to	131.00
Machine shop turnings	55.00 to	56.00
Mixed borings and turnings	47.00 to	48.00
Shoveling turnings	64.00 to	65.00
Cast iron borings	69.00 to	70.00
Low phos. forge crop	160.00 to	161.00
Low phos. punchings plate 1/4 in. and heavier	176.00 to	177.00
Low phos. 2 ft. and under	171.00 to	172.00
No. 1 RR hvy. melting	122.00 to	123.00
Scrap rails random lgth.	145.00 to	146.00
Reroller rails	159.00 to	160.00
Rails, 2 ft. and under	173.00 to	174.00
RR couplers and knuckles	139.00 to	140.00
RR car axles	164.00 to	165.00
No. 1 machinery cast	134.00 to	135.00
Cupola cast	114.00 to	115.00
Stove plate	134.00 to	135.00
Steel car wheels	159.00 to	160.00
Stainless		
18-8 bundles and solids	1,150.00 to	1,160.00
18-8 turnings	1,000.00 to	1,010.00
430 bundles and solids	240.00 to	250.00
430 turnings	155.00 to	165.00

Philadelphia

No. 1 hvy. melting	$ 95.00 to	$ 98.00
No. 2 hvy. melting	85.00 to	88.00
No. 1 dealer bundles	137.00 to	140.00
No. 2 dealer bundles	65.00 to	68.00
No. 1 busheling	127.00 to	130.00
Shredder scrap	120.00 to	123.00
Machine shop turnings	29.00 to	32.00
Mixed borings and turnings	29.00 to	32.00
Shoveling turnings	50.00 to	53.00
Low phos. 5 ft. and under	118.00 to	121.00
Low phos. 2 ft. punchings	140.00 to	143.00
Electric furnace bundles	140.00 to	143.00
RR specialties	124.00 to	127.00
Rails, 2 ft. and under	145.00 to	148.00
Cupola cast	100.00 to	103.00
Heavy breakable cast	52.00 to	55.00
No. 1 machinery cast	110.00 to	113.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 78.00 to	$ 79.00
No. 2 hvy. melting	76.00 to	77.00
No. 1 dealer bundles	127.00 to	128.00
No. 2 bundles	55.00 to	56.00
No. 1 busheling	125.00 to	126.00
Drop forge flashings	75.00 to	76.00
Machine shop turnings	53.00 to	54.00
Mixed borings and turnings	25.00 to	26.00
Shoveling turnings	53.00 to	54.00
Cast iron borings	59.00 to	60.00
Heavy breakable cast	45.00 to	46.00
Mixed cupola cast	62.00 to	63.00
Automobile cast	84.00 to	85.00
Stainless		
18-8 bundles and solids	1,100.00 to	1,110.00
18-8 turnings	850.00 to	860.00
430 bundles and solids	240.00 to	250.00

Youngstown

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 101.00 to	$ 102.00
No. 2 hvy. melting	91.00 to	92.00
No. 1 dealer bundles	128.00 to	129.00
No. 2 dealer bundles	58.00 to	59.00
Machine shop turnings	45.00 to	46.00
Shoveling turnings	45.00 to	46.00
Low phos. plate	128.00 to	129.00
Electric furnace bundles	131.00 to	132.00
Galvanized bundles	129.00 to	130.00

Cleveland

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to	$ 96.00
No. 2 hvy. melting	84.00 to	85.00
No. 1 dealer bundles	128.00 to	129.00
No. 1 factory bundles	134.00 to	135.00
No. 2 bundles	52.00 to	53.00
No. 1 busheling	124.00 to	125.00
Machine shop turnings	50.00 to	51.00
Shoveling turnings	50.00 to	51.00
Cast iron borings	50.00 to	51.00
Cut structural & plates, 5 ft. and under	111.00 to	112.00
Cut structural & plates, 2 ft. and under	138.00 to	139.00
Low phos. punchings plate	144.00 to	145.00
Foundry steel, 2 ft. & under	88.00 to	89.00
No. 1 RR hvy. melting	105.00 to	106.00
Rails, 2 ft. and under	151.00 to	152.00
Rails, 18 in. and under	153.00 to	154.00
No. 1 machinery cast	88.00 to	89.00
Mixed cast	53.00 to	54.00
Stainless		
18-8 bundles	1,105.00 to	1,115.00
18-8 turnings	855.00 to	865.00
430 bundles	245.00 to	255.00

Buffalo

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 90.00 to	$ 91.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 busheling	125.00 to	126.00
No. 1 dealer bundles	125.00 to	126.00
No. 2 bundles	46.00 to	47.00
Machine shop turnings	28.00 to	29.00
Mixed borings and turnings	28.00 to	29.00
Shoveling turnings	34.00 to	35.00
Cast iron borings	37.00 to	38.00
Low phos. plate	124.00 to	125.00
Structural and plate, 2 ft. and under	134.00 to	139.00
Rails, 2 ft. and under	139.00 to	140.00
Scrap rails, random lgth	114.00 to	115.00
No. 1 machinery cast	104.00 to	105.00
No. 1 cupola cast	87.00 to	88.00

St. Louis

No. 1 hvy. melting	$ 104.00 to	$ 105.00
No. 2 hvy. melting	84.00 to	85.00
No. 1 busheling	129.00 to	130.00
No. 1 dealer bundles	132.00 to	133.00
No. 2 bundles	87.00 to	88.00
Machine shop turnings	49.00 to	50.00
Shoveling turnings	53.00 to	54.00
Cast iron borings	57.00 to	58.00
No. 1 RR hvy. melting	123.00 to	124.00
Rails, random length	113.00 to	114.00
Rails, 5 ft. and under	134.00 to	135.00
Plate and structural, 5 ft. and under	123.00 to	124.00
Cupola cast	89.00 to	90.00
Heavy breakable cast	43.00 to	44.00
Stove plate	112.00 to	113.00
Steel car wheels	132.00 to	133.00
Rerolling rails	130.00 to	131.00
Unstripped motor blocks	66.00 to	67.00

Birmingham

No. 1 hvy. melting	$ 99.00 to	$ 100.00
No. 2 hvy. melting	95.00 to	96.00
No. 1 dealer bundles	105.00 to	106.00
No. 2 bundles	80.00 to	81.00
No. 1 busheling	102.00 to	103.00
Shredder scrap	124.00 to	125.00
Machine shop turnings	42.00 to	43.00
Shoveling turnings	55.00 to	56.00
Cast iron borings	35.00 to	36.00
Electric furnace bundles	84.00 to	85.00
Elec. furnace, 3 ft. & under	99.00 to	100.00
Structural and plate, 2 ft.	139.00 to	140.00
Structural and plate, 4 ft.	129.00 to	130.00
No. 1 RR hvy. melting	129.00 to	130.00
Scrap rails, random lgth	124.00 to	125.00
Rails, 2 ft. and under	150.00 to	151.00
Angles and splice bars	129.00 to	130.00
No. 1 cupola cast	105.00 to	106.00
Unstripped motor blocks	94.00 to	95.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 96.00 to	$ 97.00
No. 2 hvy. melting	86.00 to	87.00
No. 1 dealer bundles	120.00 to	121.00
No. 2 bundles	63.00 to	64.00
No. 1 busheling	120.00 to	121.00
Machine shop turnings	30.00 to	31.00
Shoveling turnings	40.00 to	41.00
Cast iron borings	43.00 to	44.00
Low phos. 18 in. and under	132.00 to	133.00
Rails, random length	116.00 to	117.00
Rails, 2 ft. and under	132.00 to	133.00
No. 1 cupola cast	96.00 to	97.00
Heavy breakable cast	59.00 to	60.00
Drop broken cast	110.00 to	111.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 69.00 to	$ 71.00
No. 2 hvy. melting	61.00 to	62.00
No. 2 dealer bundles	35.00 to	37.00
Mixed borings and turnings	10.00 to	11.00
Shoveling turnings	10.00 to	12.00
Clean cast, chem. borings	37.00 to	38.00
No. 1 machinery cast	80.00 to	81.00
Mixed yard cast	53.00 to	54.00
Heavy breakable cast	17.00 to	19.00
Stainless		
18-8 prepared solids	770.00 to	790.00
18-8 turnings	490.00 to	510.00
430 prepared solids	170.00 to	180.00
430 solids	185.00 to	195.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 72.00
No. 2 hvy. melting	60.00 to	62.00
No. 1 dealer bundles	88.00 to	90.00
No. 2 bundles	33.00 to	35.00
No. 1 busheling	83.00 to	85.00
Shredder scrap	78.00 to	80.00
Machine shop turnings	18.00 to	20.00
Shoveling turnings	23.00 to	25.00
No. 1 machinery cast	85.00 to	87.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	22.00 to	24.00

San Francisco

No. 1 hvy. melting	$ 63.00 to	$ 65.00
No. 2 hvy. melting	57.00 to	59.00
No. 1 dealer bundles	55.00 to	57.00
No. 2 dealer bundles	43.00 to	44.00
Machine shop turnings	15.00 to	16.00
Cast iron borings	15.00 to	16.00
No. 1 cupola cast	87.00 to	89.00

Los Angeles

No. 1 hvy. melting	$ 73.00 to	$ 75.00
No. 2 hvy. melting	67.00 to	69.00
No. 1 dealer bundles	65.00 to	67.00
No. 2 dealer bundles	47.00 to	49.00
Machine shop turnings	17.00 to	18.00
Shoveling turnings	18.00 to	19.00
Cast iron borings	18.00 to	19.00
Elec. furnace, 1 ft. and under (foundry)	80.00 to	82.00
No. 1 cupola cast	84.00 to	86.00

Seattle

No. 1 hvy. melting	$ 94.00 to	$ 95.00
No. 2 hvy. melting	84.00 to	85.00
No. 2 bundles	69.00 to	70.00
No. 1 cupola cast	99.00 to	100.00
Mixed yard cast	85.00 to	87.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 103.00
No. 2 hvy. melting, cut 2 ft. and under	90.00
No. 1 dealer bundles	128.00
No. 2 bundles	79.00
Mixed steel scrap	73.00
Bush. new fact. prep'd	123.00
Bush. new fact. unprep'd	99.00
Machine shop turnings	31.00
Short steel turnings	31.00
Mixed borings and turning	25.00
Cast scrap	102.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 99.00 to	$ 100.00
No. 2 hvy. melting	89.00 to	90.00
No. 2 bundles	52.00 to	53.00
Machine shop turnings	37.00 to	38.00
Crushed turnings	47.00 to	48.00
Shredder scrap	107.00 to	108.00
Cut structural plate, 2 ft. and under	122.00 to	123.00
Cut structural plate, 5 ft. and under	110.00 to	111.00
Unstripped motor blocks	60.00 to	61.00
Cupola cast	95.00 to	96.00

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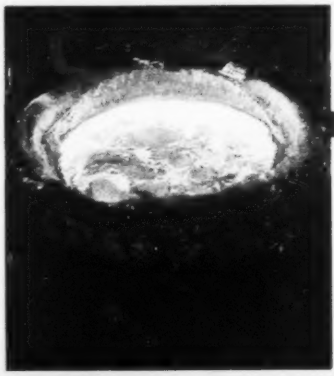
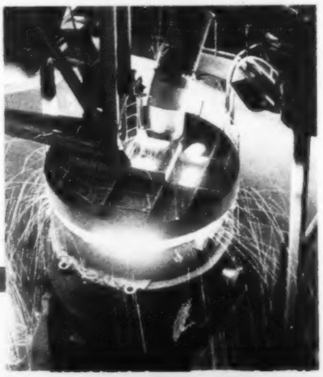
IRON AGE

THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

A Fairchild Business Publication

JUNE 1988





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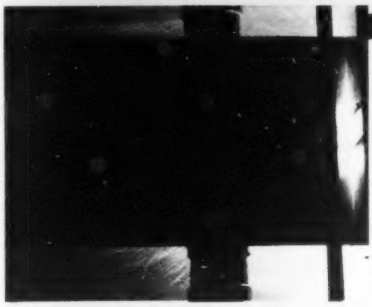

PLUS EPA'S NEW EF DUST RULES

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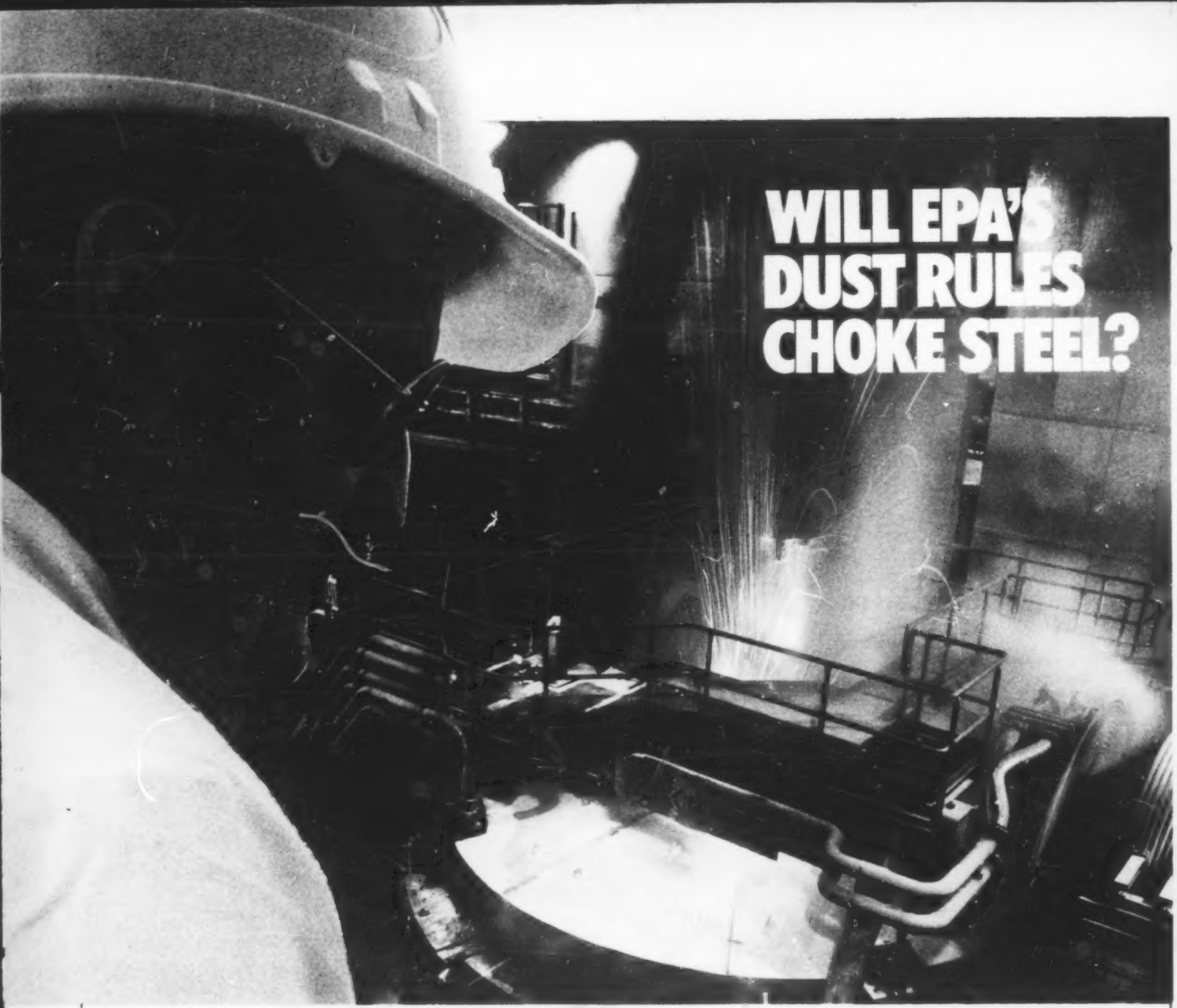
BPA

WILL EPA'S DUST RULES CHOKE STEEL?



The Federal regulators have opted for thermal recovery as the best means to dispose of the 500,000 tons of EAF dust produced each year.

The federal government's proposed rules for the disposal of electric arc furnace (EAF) dust will have a devastating impact on the steel industry, reducing production and hiking steel costs.

Or, these costly requirements will do little to slow the growth of electric furnace steel production, save for inducing producers to beef up their transportation networks in order to safely dispose of the toxic dust waste.

That either of these scenarios will come to pass probably is unlikely in the near future. But the fact that responsible steel industry executives would reach such divergent conclusions about the dust regulations is indicative of just how divisive the government's proposal has been.

Touching off this intra-industry debate was the U.S. Environmental Protection Agency's (EPA) May 23 proposed regulation stipulating how steel producers must dispose of the estimated 500,000 tons of dust produced annually by electric arc furnaces.

Most controversial, the proposal categorizes thermal recovery as the best demonstrated available technology for cleansing the dust of zinc and other toxic metals before it can be dumped in a landfill. Although the agency has not ruled out other recovery methods, no other treatment methods currently meet the agency's standards.

Thermal reprocessing costs up to $100 for a ton of dust, depending upon its recoverable zinc content. That's about twice the cost of dumping the material. Each 52 tons of steel produced in electric furnaces produces one ton of dust.

In selecting thermal technology as the best way to dispose of the dust, the EPA dealt a blow to many electric arc furnace steel firms, who had hoped and expected the agency to permit the use of chemical fixation, or stabilization, to treat the dust wastes before disposal in a landfill.

This process locks up the hazardous metals in various compounds and prevents them from leaching into the soil or groundwater. Chemfix Technologies, Inc., Kenner, La., a leading chemical stabilization contractor, estimates the cost of treating one ton of dust at between $40 and $70 a ton.

8/8/88

While the EPA continues to accept comments on its proposal, it has said in no uncertain terms that it will issue its final rule by August 8—dubbed the "8/8/88 decision day" by industry—the deadline for action under the 1984 amendments to the Resource Conservation and Recovery Act. However, as a concession to industry, the agency will permit dumping of untreated dust in state-of-the-art landfills through August 1990.

Steel industry officials, however, say this grace period means little, given the $2 million to $3 million cost to bring an existing landfill into compliance with the new standards.

James F. Collins, National Steel Producers Association president, termed the proposal a prescription for disaster. "Given the enormous costs associated (with) complying with the regulations, they will be a dreadful blow to some companies and have a disastrous impact on those (firms) which now are marginal producers," Mr. Collins said.

"If you suppose that an (EAF steel producer's) after-tax return is $20 a ton and it is reduced to $18 by the cost of complying" with the regulations, he added, "then the 10 pct after-tax impact is quite significant and for... some firms, it could mean their continued viability is in question."

Likewise, the Steel Bar Mills Association, which includes many EAF steelmakers, has warned that if the proposal is implemented, U.S. carbon steel production could drop by 8 pct.

While no steel industry executive or association official has rushed to embrace the agency's proposal, others take a less dire view of its ultimate impact. "While the EPA's regulation will impose new costs, that EAF operators certainly do not want to incur, it ultimately won't affect the growth of this industry," countered Joseph Goodwill, director of the Carnegie-Mellon University-based Center for Metals Production (CMP).

Since 1976, he said, steel produced in electric arc furnaces has increased from 19 pct of all liquid steel made nationwide, to about 38 pct today.

The controversy over the impending regulation, however, hinges on more than just simple economics. Rather, industry officials take issue with the federal agency, and often each other, about the basic tenets underlying the proposal—specifically, the selection of thermal reduction over chemical fixation.

Fixation, as noted, binds up potentially hazardous metals in supposedly inert substances which are then buried in landfills. Thermal reduction is just that: the heat-induced chemical reduction of metals, such as zinc, to metal oxides which then are shipped to other processing facilities and treated to extract the metal.

In this country, Horsehead Resource Development Co., operates a thermal facility in Palmerton, Pa. Another is now coming on line in Calumet, Ill. Both facilities utilize the Waelz kiln in the thermal reduction process. Horsehead also operates the former St. Joe Flame Reactor plant in Monaca, Pa. (see box, p. 26.)

Elsewhere in the U.S., Inmetco, Inc., operates an Ellwood City, Pa., plant, but it handles stainless steel dust exclusively, recovering nickel and chromium. Its capacity is 60,000 tons of dust annually.

Other thermal reduction processes have been suggested as a means for handling the dust, including the plasma reduction processes developed by SKF Engineering, Tectronics Corp. and Plasma Energy Corp. A handful are operating in Europe, but the technology has stirred little interest in the U.S. Also in Europe, Elkem a/s Engineering has built a pilot plant to handle EAF dust at its R&D center in Kristiansand, Norway. Elkem's Multi-Purpose Electric Furnace uses its electric slag resistance furnace and zinc condensing technology of Imperial Smelting Processes, Ltd., to recover zinc and produce a non-toxic slag from EAF dust.

The interest in other thermal treatment process is expected to rise, largely because Horsehead's plants, when operating at maximum capacity, can reprocess no more than 320,000 tons of dust annually. Yet, about 500,000 tons of EAF dust are produced annually in the U.S.

It can take about two years to build a new thermal processing plant and cognizant of this time lag, EPA granted the industry a two-year stay of the thermal processing requirement.

Many steel industry officials contend, however, that this grace period, and the entire regulation for that matter, are shortsighted.

"We are faced with a serious, major problem," said Earle F. Young, the American Iron and Steel Institute's vice president for environment and energy. "We don't know who has the money to build these (thermal reprocessing plants) and how they can be built in time to meet the regulation's deadline.

"Then there's the question of how to (treat) about 500,000 tons of dust each year," Mr. Young added, "when capacity is far short of that."

Transporting EAF Dust

Many dust producers, including industry giants Bethlehem Steel and USX Corp.'s USS division, now ship all residual dust to Horsehead for reprocessing. But for steel producers with plants distant from the Pennsylvania or Chicago-area facilities, the cost for just transporting the dust is a major concern.

Florida Steel Corp. "now ships its EAF dust about 1,000 miles from Tampa to Horsehead's Palmerton facility because we have no" landfill, said James Turner, the Tampa-based firm's environment manager. Not surprisingly, Mr. Turner noted "our (dust) transportation costs are much higher than the cost for thermal treatment."

Armco, Inc., also uses Horsehead given its plants' proximity to the thermal treatment operation. "I don't know what West Coast and Gulf Coast area steel (producers) will do with their wastes since it's a very long haul to get the dust" to Horsehead, said Harold McCume, an Armco engineer in the firm's environment and energy department at Parsippany, N.J.

The long-haul shipment of the unprocessed dust ironically could pose an environmental hazard in its own right. "There is the inherent danger of an accident when shipping any waste long distances, and hazardous waste (EAF dust) could be dumped on the environment," warned Anthony A.A. Stinola, hazardous waste manager with USX's steelmaking division.

Such logistics aside, several industry executives assert that the EPA's selection of the thermal process as the best available technology overlooks crucial economic issues and practical ones, too. "By only permitting thermal technology and no landfills (to dispose of the EAF dust), the EPA reduces competition and gives reclaimers a free hand in pricing," reasoned Florida Steel's Mr. Turner.

"In addition," he said, "Horsehead recovers zinc and has a (requirement) that the dust contain at least 15 pct of this metal. So steel companies that use scrap in their (EAF) furnaces with low zinc content may have a problem."

About 22 pct of all EAF dust produced nationwide has a zinc content of 10 pct or less, according to Oliver Dulle of the Steel Bar Mills Association.

Thomas Unger, Horsehead business development vice president, said the firm "likes to see at least a 20 pct" zinc content in EAF dust processed at its facilities.

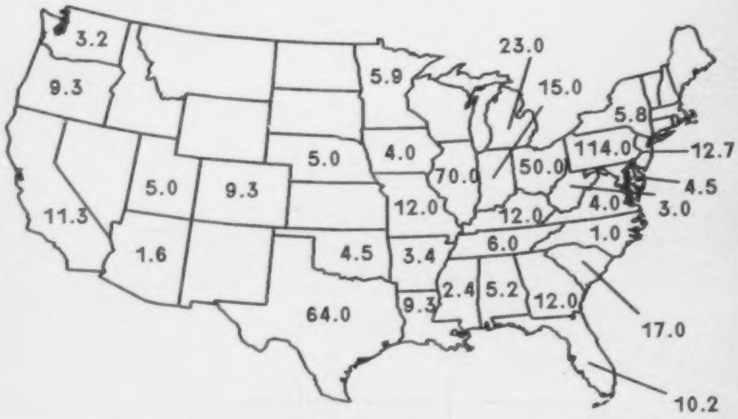
Mr. Unger said the Palmerton facility charges $52 a ton of dust and the Calumet plant charges $60.

"Below 20 pct zinc we charge an additional $3-a-ton for each percentage point below 20 pct," he explained. "On rare occasions we

TONS OF DUST PER YEAR BY STATE

TOTAL U.S. EAF DUST PRODUCTION-500,000 TONS/YEAR

(STATE TOTALS IN THOUSANDS OF TONS)



SOURCE: CENTER FOR METALS PRODUCTION

Chemical Composition of Dust From Electric Arc Furnaces

(Lehigh University Study)

CHEMICAL	SAMPLE	
	Carbon steel dust	Stainless steel dust
	(wt.%)	(wt%)
Fe	35.100	31.70
Fe(11)	1.700	3.10
Zn	15.400	1.00
Cd	0.028	0.16
Pb	1.500	1.10
Mn	3.000	5.60
Cr	0.380	10.20
Ni	0.070	2.10
SiO_2	5.300	8.20
Al_2O_3	0.370	0.69
CaO	4.800	3.10
Na_2O	0.830	1.34
C	0.440	0.29
S	0.360	0.23
F	0.900	3.30
Cl	1.000	0.30

Flame Reactor: 'We're Doing Selective Reduction'

In Monaca, Pa., dust from electric furnaces is being charged into the Flame Reactor of Horsehead Resource Development Co., Inc.

The steps taken help explain why it has proved so difficult to come up with a satisfactory disposal method for arc furnace dust.

The difficulty centers on lead, cadmium and chromium, which are classified as hazardous and which accompany the growing quantities of zinc in the scrap used by furnaces.

All four of these scrap constituents wind up in the dust collected by baghouses.

To retrieve the zinc while converting the three hazardous elements into useable or disposable form, the Flame Reactor starts with a mixture of coal or coke fines and oxygen enriched air. This produces a flame that is hot—around 2,000°C.—and rich in CO.

"That expands into the downstream reactor section and we inject electric furnace dust in whatever form it's recovered," said John F. Pusateri, director of Flame Reactor operations and development for Horsehead Resource.

"The volatile metal oxides are reduced and fume off as vapor," said Mr. Pusateri.

A portion of the hazardous material travels with the zinc oxide. "Through the zinc smelting process, we'll concentrate lead and cadmium, usually in sinter fumes," he explained.

The lead fraction can be leached to remove the zinc, leaving a cake that is sold to lead smelters. The zinc oxide is refined in a conventional smelter. (Horsehead has combined New Jersey Zinc and the zinc portion of St. Joe Minerals into Zinc Corp. of America.)

The retrieval of useable elements leaves a slag residue containing 40 to 50 pct iron and most of the original chromium.

"In our process, we're doing selective reduction," Mr. Pusateri continued. "We're not reducing the iron (to a metallic state). We're keeping it in the slag as an oxide partly because we can't justify expending the energy to reduce iron. It also provides a convenient matrix to tie up the chrome."

Under a contract with the Center for Metals Production in Pittsburgh, Horsehead Resource has developed data aimed at having the Flame Reactor slag removed from EPA's hazardous material list. Another test program was conducted under a Bureau of Mines contract.

The plant at Monaca is classed as a demonstration unit, but its capacity of 15,000 to 20,000 tons a year could be suitable for some commercial situations. Mr. Pusateri estimated that a 20,000-ton commercial plant would cost between $2 million and $2.5 million.

Horsehead plans to own and operate Flame Reactor plants, processing dust on a toll basis. The company has site studies going in the Midwest and the Southeast. The metal content of the dust enters into the economics, but Mr. Pusateri doesn't rule out processing material with as little as 5 pct zinc. It's now costing steelmakers as much as $200 a ton to get rid of furnace dust, he noted, so there are large amounts that can be applied against processing costs.

Mr. Pusateri is optimistic about the outlook for the Flame Reactor. He feels the Flame Reactor has the advantage of being tied in with existing zinc smelting operations. "That's one of the reasons we didn't go to condensed zinc. It's difficult to operate condensers every day."

Two of the plasma processes for electric furnace dust do go to metallic zinc. This involves reducing and vaporizing the zinc and then condensing very rapidly to a liquid.

The Flame Reactor condenses the vapor to a solid oxide. This can be refined in the 150,000 tons of pyrometallurgical capacity at the New Jersey Zinc plants in Monaca and in Bartlesville, Okla.

By George J. McManus

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will process dust with a zinc content of 10 pct or less."

Catch-22

Mr. Goodwill of CMP said the government's dust regulation creates its own version of a "Catch-22." Currently, the thermal process produces zinc oxide which is then converted to the base metal, or sold to chemical firms for other uses. "There is actually a relatively limited market for zinc oxide and consequently," a stable market price. If more thermal facilities came on stream, and more are needed to comply with the EPA disposal edict, "a lot more zinc oxide would be produced and this, in turn, would drive its price down," he said.

Mr. Unger disagrees, noting that Horsehead's sister firm, Zinc Corp. of America, has the flexibility of distilling the dust residue into nearly pure zinc oxide, or the elemental metal, based on prevailing market conditions. Zinc Corp. in Monaca, Pa., and Horsehead Resource Development, are divisions of the New York-based Horsehead Industries, Inc.

Officials with several EAF steel producers told *Iron Age* they believe construction of regional thermal reprocessing plants would at least solve the dilemma of limited capacity and inordinately high transportation costs. However, none of the firms, or industry trade groups, are building these regional plants at this time.

Mr. Unger told *Iron Age* his firm "is looking at putting a (thermal reprocessing) plants in Texas and in the Southeast, possibly in Georgia."

EPA Testing Process

Meanwhile, David Boltz, a Bethlehem waste management manager, alleged the EPA in essence skewed its own test procedures in deciding the thermal process was the best available technology, while ruling out chemical stabilization. "In its testing of the thermal (process), the EPA threw out several 'data points' so that it only had three remaining ones on which to base" its decision that thermal was the best, he said. "We also believe the agency threw out a lot of data (supporting) stabilization as the best technology and illegally used the toxic characteristics leaching procedure" to disqualify stabilization as the preferred disposal technology.

Responding to these allegations, James Berlow, chief of the EPA's treatment technology section, acknowledged that some test parameters were tossed out in the EPA's evaluation of Horsehead's technology, but only after determining the facility was not "yet operating under its own (optimum) operating conditions."

Mr. Boltz noted that Bethlehem, whose Johnstown and Steelton, Pa., EAF facilities produce 52,000 tons of dust annually, petitioned the EPA in 1986 to delist, or exempt this effluent as a hazardous waste, asserting when chemically stabilized, it poses no environmental hazard. Although the agency has yet to act on this and several other such petitions, in late April it did grant a similar one filed last year by Roanoke Electric Steel Corp., Roanoke, Va.

Scott Maid, another EPA official, said the agency "will be processing the delisting petitions as soon as we can." The agency, though, apparently is not about to issue wholesale exemptions. Using the RCRA law as a guide, Mr. Berlow said its primary intent is to reduce the dangers posed by hazardous wastes in the way that reduces its bulk.

"In the case of EAF dust," he said, "we see these requirements as minimizing the waste and also recovery of (heavy metals) as most beneficial and a lesser threat to the environment than land disposal."

Given the fact that stabilization can cost about half as much as thermal processing, the National Steel Producers Association's Mr. Collins said the EPA should grant some exemptions given the paucity of thermal facilities and landfills that can legally accept stabilized EAF dust. "This would only make sense for companies that are far away from treatment centers to be able to dispose of the dust on-site, so long as these (dumps) pass leachate tests," he said.

But other industry officials, even those who favor the stabilization method, concede the EPA is not totally off-base in choosing thermal over fixation technology for EAF dust neutralization.

"Chemical fixation probably violates the spirit of the (RCRA) law because it increases the volume" of disposed wastes, said Mr. Dulle. The CMP's Mr. Goodwill added that with "fixation there is the potential for some leaching further on" in time."

'Plainly put, the (proposed EAF dust regulation) goes in the wrong direction. It will force higher costs on EAF producers.'

Dust On-Site

Steel firms using the electric arc furnaces hardly are rushing to build new landfills, or upgrading existing ones, that would comply with the tougher EPA standards.

Typically, it can cost about $3 million for a conversion or new construction. Even firms such as Chaparrel Steel Co., Midlothian, Texas, which built a new, state-of-the-art double-lined leachate collection and groundwater monitoring fill, recognizes hazards inherent in maintaining such facilities.

"We preferred to build the (new) site on-site rather than shipping off the dust" for processing, said Chris Avent, a special projects manager with Chaparrel Steel.

"If the dust is on-site we can keep an eye on it and know what's happening to it. After all, it is a hazardous waste and if it goes into someone else's landfill and leaches out we remain liable," he said.

Mr. Dulle, moreover, noted that should a chemical waste problem emerge in the distant future, and the last handler, such as a landfill operator, has gone out of business, the liability would go back to the original dust generator.

If these uncertainties were not enough to cloud the the future of EAF dust disposal, and perhaps the industry itself, new technological wrinkles have emerged to further muddy the waters. Plasma reduction units, like the handful now operating in Europe, could neutralize heavy metal EAF dust hazards while producing elemental zinc as a by-product.

The EPA's proposed regulations would permit the use of any reduction process that meets its general guidelines for waste neutralization. Although the plasma reactor might be an alternative to Waelz kiln technology, CMP's Mr. Goodwill said he knows of no firm that has made a commitment to build such a facility. Horsehead, said Mr. Unger, investigated this technology "but believes our own approach is the best."

Whether this is the best approach, at least several steel industry officials assert the EPA's one-technology approach ultimately will hurt American steel producers. "Plainly put, the (proposed EAF dust regulation) goes in the wrong direction. It will force higher costs on EAF producers that they will have to absorb, where their foreign competitors will not," said Bethlehem's Mr. Boltz.

The EPA's Mr. Berlow insists the agency will issue its final regulation by August 8 in order to avoid the underlying environmental law's soft hammer. "Under RCRA's 1984 amendments, if we fail to meet this deadline, then all waste is banned from landfills, except those ...facilities that are double-lined, have groundwater monitors and leachate collection systems. And if we fail to act by May 1990," he added, "all disposal is banned from landfills entirely.

"Our intention is to meet the 8/8/88 deadline."

By Jim Ostroff
of Fairchild News Service

1ST QUARTER EARNINGS
PROFITS, PROFITS, PROFITS

Earnings of some of the major steel mills doubled and tripled in the first quarter, while the nonferrous producers posted even higher gains in income.

Good times returned for the steel industry in the first quarter of 1988.

Earnings of major mills doubled and tripled. Three steel companies earned more than 7 pct on sales. Another three had margins over 6 pct.

There was, moreover, every reason to look for sustained prosperity. Going into May, mill orders indicated that the second quarter would see shipments at least equal to the 21 million tons of the first quarter. No real decline has been indicated for the third quarter.

"We see no letup in demand nor softening of prices for steel products," said David M. Roderick, chairman of USX Corp. Mr. Roderick expected "a continued strong financial performance for the remainder of the year."

Reversing the pattern of recent years, the steel segment of USX had an operating profit – $167 million – that was nearly double the earnings of oil and gas operations.

"The impressive results in steel are due to reduced costs, strong demand, and modestly higher prices," said Mr. Roderick. "We're finally putting to rest the image of a rust-belt industry."

In the first quarter, Bethlehem Steel Corp. shed the image of a company on the brink of financial failure. Benefitting from the long awaited revival of plates and structurals, Bethlehem's steel segment boosted operating income from $49 million in the first quarter of 1987 to $98 million in the first quarter of 1988.

In addition to benefitting from current good business, steel companies are getting some substantial compensation from their long depression. Bethlehem received an investment tax credit refund of $140 million in March. Only $10 million of this was included in first quarter earnings. The credit was more than offset by a charge of $15 million for a coal mine fire and by a loss of $17 million on marine operations.

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The $62 million earned by Inland Steel Industries in the first quarter was up only about 2 pct from 1987. In last year's first quarter, however, Inland had an investment credit refund of $50 million. The 1988 refund was a little under $4.2 million. Operating income on steel production rose from $13.6 million in 1987 to $52.8 million in the first quarter of 1988.

One sign of the times was restoration by Inland of regular dividend payments. "Inland Steel Industries enjoys its best financial posture in several years," said Frank W. Luerssen, chairman. "Our debt to capital ratio is down to 27.8 pct. Our controllable costs continue their downward course."

For financial reporting purposes, Inland has used up its loss carry-forwards, but the company actually has another $600 million in past losses that can be applied against federal income taxes.

National Steel Corp. went from a loss of $5.6 million in the first quarter of 1987 to a profit of $13.6 million in the first quarter of 1988. The profit swing was really bigger because National had an investment credit refund of $18 million in the 1987 quarter.

National's shipments in the first quarter were up 10 pct from the first quarter of 1987. This was of interest because the company makes only sheet products and these were supposed to lag this year. Instead, the automotive market has held up well, and general sales have improved.

"Demand for flat-rolled products was very strong throughout the quarter," said Howard M. Love, chairman of National. "That strength is continuing in the second quarter, further boosted by increased automotive build schedules. At this time, bookings in the early part of the third quarter also look good, especially for the hot-rolled product line."

National's relatively thin profit margin in the first quarter suggested that the year-long contracts of auto companies were still preventing significant price relief for a major portion of the sheet tonnage.

Anyway you look at it, Weirton Steel Corp. had a good first quarter. If you look at the $20 million for profit sharing as a cost, Weirton earned a respectable 5.5 pct on sales. If you take the full after-tax income of $40 million, the company had a sensational 11 pct return on sales.

The employee's share of Weirton's profit has risen to 50 pct. This rise from one-third was made

(Sales and earnings table appears on p. 30; story continues on p. 32.)

EARNINGS

STEEL: PROFITS KEEP ROLLING IN

FIRST QUARTER PROFIT REPORT—1988 (In Millions of Dollars)

	EARNINGS				SALES		
	E/S	1st Q 1988	1st Q 1987	Pct Change	1st Q 1988	1st Q 1987	Pct Change
USX	3.9	$157.0	($72.0)	–	$3,997.0	$2,790.0	+43.0
LTV	7.1	163.9	129.6	+26.4	1,881.1	1,908.1	-1.5
BETHLEHEM	6.4	85.4	25.6	+234.0	1,328.7	1,130.7	+17.5
INLAND	6.7	63.6	62.5	+1.8	966.5	842.6	+15.0
ARMCO	5.8	44.0	52.5	-16.2	748.9	727.8	2.9
NATIONAL	2.5	13.6	(5.6)	–	618.2	537.4	+15.0
TOTAL	5.5	527.5	192.6	+174.0	9,540.4	7,936.6	+20.2
WEIRTON	11.0	40.4	27.9	+44.8	364.2	346.2	+5.1
ALLEG. LUD.	7.4	20.4	12.0	+70.0	274.5	205.6	+34.0
WHEEL-PGH	18.8	49.6	(115.7)	–	263.0	255.6	+2.8
NUCOR	7.0	17.2	10.8	+58.6	245.2	186.8	+31.0
CYCLOPS	2.6	6.3	–	–	241.0	–	–
CARPENTER	1.8	2.1	(0.8)	–	147.5	125.3	17.7
LUKENS	4.8	6.7	2.9	+130.0	139.0	110.6	+26.0
FLORIDA	5.2	5.6	3.7	+51.0	107.2	88.7	+21.0
ACME	4.3	4.0	2.9	+38.0	93.6	74.4	+25.8
BIRMINGHAM	6.8	5.8	2.4	+145.0	86.4	59.1	+46.0
CF&I	4.7	4.1	(5.0)	–	86.8	55.4	+56.7
CSC	–	(3.4)	1.7	–	55.4	46.8	+18.3
OREGON	10.1	4.5	2.1	+114.0	44.4	28.3	+57.0
EASTMET	0.2	0.1	0.1	–	35.4	26.8	+32.0
NEW JERSEY	3.4	0.7	4.1	-83.0	20.5	31.7	-35.0

( ) Indicates a loss

NONFERROUS: DOUBLE-DIGIT GAINS

FIRST QUARTER PROFIT REPORT—1988 (In Millions of Dollars)

	EARNINGS			SALES		
	1st Q 1988	1st Q 1987	Pct Change	1st Q 1988	1st Q 1987	Pct Change
ALCAN	$175.0	$71.0	+146.0	$1,950.0	$1,523.0	+28.0
ALCOA	178.7	49.5	+261.0	2,123.9	1,793.1	+18.4
AMAX	82.3	120.0	-31.0	917.0	765.0	+20.0
ASARCO	46.2	(21.3)	–	446.8	273.7	+50.0
BATTLE MOUNTAIN	15.8	8.8	+80.0	37.1	24.5	+51.0
BRUSH WELLMAN	7.9	6.5	+21.5	90.0	73.0	+23.3
COMINCO	31.9	4.4	+625.0	365.5	297.9	+23.0
ECHO BAY	10.9	8.1	+34.6	60.0	43.4	+38.3
FALCONBRIDGE*	35.2	28.0	+25.7	425.9	257.6	+65.3
HANDY & HARMAN	2.7	1.5	+80.0	165.5	141.5	+17.0
HECLA MINING	4.9	(3.5)	–	21.9	15.3	+43.1
INCO	125.9	(5.0)	–	676.0	381.0	+77.0
INSPIRATION	(5.0)	(5.7)	–	286.7	246.9	+16.1
KAISERTECH	36.3	(31.1)	–	520.0	488.2	+39.4
LAC MINERALS	8.0	3.6	+122.0	45.0	45.9	–
MAGMA COPPER	7.3	(0.1)	–	147.5	125.4	+17.6
NORANDA*	128.7	29.5	+336.0	2,056.1	1,654.6	+24.3
OLIN	29.2	24.5	+19.2	567.2	472.7	+20.0
PHELPS DODGE	92.5	16.8	+451.0	568.9	372.9	+52.6
PINE POINT MINES*	9.6	4.4	+118.0	35.7	25.5	+40.0
REYNOLDS METALS	70.1	25.9	+159.0	1,176.1	943.8	+24.6
RIO ALGOM*	26.4	16.2	+63.0	464.9	363.9	+27.8
SHERRITT GORDON	17.4	(3.0)	–	113.9	62.7	+81.7
VULCAN MATERIALS	23.6	16.6	+43.0	202.7	168.9	+20.0

( ) Indicates a loss * Canadian funds

in the expectation that the company's net worth will reach the $250 million level that triggers an increase.

The mini-mills did well in the second quarter. Nucor Corp. had a 7 pct return on sales and a 15.2 pct return on equity. Nucor's steel shipments were up 20 pct from the first quarter of 1987; the company's steel backlog was triple that of a year earlier.

Nucor's steel deck sales of 26,000 tons in the first quarter were down from 33,000 tons in the first quarter of 1987. This tonnage is of interest because the company's decking line will provide one outlet for the 800,000-ton sheet mill being built at Crawfordsville, Ind. Coming on stream this summer is Nucor's 650,000-ton structural mill in Arkansas.

Birmingham Steel Corp. earned 6.8 pct on sales of $86.4 million in the first quarter of 1988. Birmingham's sales were up 46 pct and its earnings 158 pct.

The stainless flat-rolled business continued to boom. Allegheny Ludlum Steel Corp. earned a 7.4 pct on sales in the first quarter of 1988. "In addition to continuing strength in stainless steel orders from consumer durable markets, we are particularly heartened by the strong resurgence in orders from the capital goods markets for our silicon electrical steels and stainless steel plate products," said Richard P. Simmons, chairman of Allegheny Ludlum.

The one soft spot for steel was the specialty bar business. A loss was reported by CSC, which operates the Warren, Ohio, plant that used to belong to Copperweld Steel. Carpenter Technology Corp. had a good profit recovery, but its margin was below the levels of past banner years.

Nonferrous

Nonferrous metals producers racked up higher sales and sharply higher profits in the first three months of 1988, continuing the pattern that arose in early 1987 and likely will continue through this year.

Aluminum Co. of America (Alcoa) posted a whopping 261 pct gain in earnings for the first three months of the year—$178.7 million compared to $49.5 million for the same period of 1987.

Similarly, Canadian-based Alcan Aluminium, Ltd., reported record profits and sales for the first three months of this year. Alcan's net income soared to $175 million compared to $71 million for the year-earlier quarter.

David M. Culver, Alcan chairman and CEO, said the company's record quarterly performance reflected the current strength of the metal's price and the company's cost-cutting efforts.

Even the changes in the nickel market in 1987,... cannot be compared to the events of the first quarter of this year

KaiserTech, Ltd., replaced the $31.1 million in red ink reported for the first quarter of 1987 with $36.3 million in profits this year, while Reynolds Metals Co. posted earnings of $70.1 million for the first three months of 1988 compared to $25.9 million for the same period of 1987.

"Currently, Reynolds and the worldwide aluminum industry are operating in a very favorable climate," William O. Bourke, Reynolds chairman and CEO, told security analysts in New York last month.

Producer inventories are low, the industry's operating capacity is at its highest level in nearly 20 years and metal supplies are tight because of strong demand in virtually all of the industry's major markets.

"Ingot prices have soared recently to levels well above 1987 averages. Yet, for the longer term, we expect more stability at levels that will be both profitable and competitive with other materials.

"Prices for many semi-fabricated products, which usually trail ingot price changes by two to six months, also have increased since January reflecting higher metal costs," he added.

Copper likewise continued its rebound from the slim profits of the previous year and the rivers of red ink of earlier periods. Phelps Dodge Corp., the nation's largest producer, reported a fivefold gain in net income for the first quarter, to $92.5 million from $16.8 million. Sales were up from $372.9 million to $568.9 million in the first three months of this year.

Asarco, Inc. reversed the pattern from the previous year, reporting profits of $46.2 million for the first quarter compared to a loss of $21.3 million for the year earlier period.

Much of the copper producers' gains stemmed from the red metal's price recovery. The same could easily be said about the nickel industry's rebound in the first quarter.

Even Donald J. Phillips, Inco chairman and CEO, in his speech to the company's shareholders in April, described the rapid rise of nickel prices in March as "unprecedented" in the industry's history.

"Even the changes that occurred in the nickel market in 1987, as dramatic as they were, cannot be compared to the fast moving events of the first quarter of this year, which were unprecedented in the history of the nickel industry....

"February's average price of $3.94 (per pound) started to cause some concern in the market place and this concern was more than justified by the escalation in March. During that month, the spot price of nickel rose from $4 to $5... to $6... to $7... to $8... to $9... and finally to $10.84 on March 28. We were clearly in a period of nickel shortage and the LME, as a commodity exchange, was reacting to it."

By George J. McManus
and Michael Marley

MATERIALS PRICES

PRICE & PRODUCTION DATA

(Effective May 2, 1988)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	276	294	289	245
Pittsburgh	204	198	195	192
Youngstown	127	131	112	122
Lake Erie	170	151	153	137
Detroit	171	169	168	155
Chicago	559	497	546	493
Midwest	203	203	183	207
Southern	232	225	223	192
Western	104	102	103	56
U.S. Production	2,046	1,970	1,972	1,799

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 37.344*
Pellets (per iron unit natural)	gross-ton 46.84-59.4**
Pellets (per iron unit natural)	gross-ton 72.45-86.9***
Mesabi, regular-unscreened	gross-ton 32.53
Mesabi, non-bessemer	gross-ton 30.03-31.53

*37.344¢—U.S. Steel, 5/20/87, FOB Mount Iron, Minn. **46.84¢—Inland Steel Mining, 1/1/87. 58.0¢—Mineral Services, 8/13/85. 59.4¢—Pickands Mather, 8/1/85, delivered hold of vessel, upper Lake ports. ***72.45¢—Cleveland-Cliffs, 12/30/86; Oglebay Norton, 3/1/87. 86.9¢—Hanna Mining, 2/26/82.

STEEL PRODUCTION, COMPOSITE PRICES

(Effective May 2, 1988)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1988	To Date 1987
Net tons, in thousands	2,046	1,970	33,653	26,372
Capability Utilization Rate	95.5	91.9	90.7	71.4

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 4/3/88)	24.333	24.333	24.333	25.236
Pig Iron** (Net ton= 2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$105.17	$108.83	$108.83	$ 73.50
No. 2 bundles	$ 72.17	$ 72.50	$ 73.83	$ 50.83

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh	$107.50	$112.50	$112.50	$ 79.50
No. 1 steel, Philadelphia	96.50	96.50	96.50	68.50
No. 1 steel, Chicago	111.50	117.50	117.50	72.50
No. 1 bundles, Detroit	117.50	127.50	127.50	78.50
Low Phos., Youngstown	120.50	128.50	128.50	79.50
No. 1 mach'y cast., Pgh	98.50	98.50	100.50	81.50
No. 1 mach'y cast., Phila	111.50	111.50	111.50	93.50
No. 1 mach'y cast., Chi	128.50	134.50	134.50	93.50

*Finished Steel Composite: Weighted index of steel bars, structurals, plates, rails, hot rolled and cold rolled sheets.

**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective May 2, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	98.00	94.00	4/29/88
Copper (C)	100.00	98.00	5/2/88
Lead	34.00	37.00	2/8/88
Magnesium Ingot	153.00	148.00	12/9/85
Nickel (LME)	607.00	695.00	4/29/88
Zinc	55.00	52.00	4/18/88

ALUMINUM: Avg. for last week & previous week. COPPER (C)=cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$260.00
Beryllium-copper strip No. 25, per lb.Be	$8.00
Beryllium powder SP200F, per lb.	$244.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz.	$446.30
Indium, per troy oz	$9.95
Iridium, per troy oz	$325.00
Magnesium sticks, 10,000 lbs	$2.12
Mercury, per 76-lb., f.o.b. N.Y.	$348.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz.	$122.00
Platinum, per troy oz.	$515.00
Rhodium, per troy oz.	$1,240.00
Silver ingots, per troy oz	$6.42
Titanium sponge, melt grade	$4.00
Tungsten powder, hyd red	$9.53-9.85
Vanadium	$6.00
Zirconium sponge	$11.20-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

Apr. 25—305.00
Apr. 26—303.00
Apr. 27—303.00
Apr. 28—302.00
Apr. 29—301.00

Scrap Prices
Brass Mill Scrap

(Cents per lb.; over 20,000 lbs. add 1¢ per lb.)

	Solids	Turnings
Copper	82	77
Yellow brass	70½	69½
Red brass	65½	61½
Comm. bronze	67	62
Mang. bronze	47	46
Free cutting rod ends	62½	61½

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	81
No. 2 copper wire	71
Light copper	65

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	72
No. 2 copper wire	63
Light copper	56
No. 1 composition	55
No. 1 comp. turnings	55
Hvy. yellow brass solids	39
Hvy. yellow brass turnings	33
Radiators	36

Aluminum

New mixed clips	62	— 63
Old sheet	51	— 52
Old cast	53	— 54
Clean dry borings	43	— 44

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	54	— 55
Mixed L.C. clips	53	— 54
Old sheets and cast	44	— 45
Borings and turnings	36	— 37
Duraluminum clippings	45	— 46

Copper and Brass

No. 1 copper wire	67	— 69
No. 2 copper wire	57	— 58
Light copper	51	— 52
Radiators	36	— 37
No. 1 composition	55	— 56
No. 1 composition turnings	51	— 52
Cocks and faucets	45	— 46
Clean heavy yellow brass	41	— 42
Brass pipe	49	— 50
New soft brass clippings	61	— 62

Lead

Heavy soft lead	12	— 13
Whole batteries	2	— 3
Type metal	21	— 22
Electrotype	13	— 14

Nickel

Nickel solids	380	—390
Nickel rod ends	373	—383
Nickel sheets, clips	373	—383
Nickel turnings	209	—229

Zinc

New zinc clippings	18	— 19
Old diecast zinc	14	— 15

EFFECTIVE MAY 2, 1988

(Effective May 2, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of Iron Age editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 107.00 to	$ 108.00
No. 2 hvy. melting	97.00 to	98.00
No. 1 dealer bundles	131.00 to	132.00
No. 1 factory bundles (auto)	146.00 to	147.00
No. 2 bundles	64.00 to	65.00
No. 1 busheling	133.00 to	134.00
Machine shop turnings	23.00 to	24.00
Shoveling turnings	69.00 to	70.00
Cast iron borings	68.00 to	69.00
Low phos. punchings plate	146.00 to	147.00
Heavy turnings	97.00 to	98.00
No. 1 RR hvy. melting	130.00 to	131.00
Rails, 2 ft. and under	155.00 to	156.00
Scrap rails, random lgth	142.00 to	143.00
RR specialties	143.00 to	144.00
No. 1 machinery cast	98.00 to	99.00
Cupola cast	90.00 to	91.00
Heavy breakable cast	40.00 to	41.00
Stainless		
18-8 bundles and solids	1,190.00 to	1,200.00
18-8 turnings	1,090.00 to	1,100.00

Chicago

No. 1 hvy. melting	$ 111.00 to	$ 112.00
No. 2 hvy. melting	107.00 to	108.00
No. 1 dealer bundles	123.00 to	124.00
No. 1 factory bundles (auto)	123.00 to	124.00
No. 2 dealer bundles	85.00 to	86.00
No. 1 busheling	124.00 to	125.00
Shredder scrap	124.00 to	125.00
Machine shop turnings	55.00 to	56.00
Mixed borings and turnings	47.00 to	48.00
Shoveling turnings	64.00 to	65.00
Cast iron borings	69.00 to	70.00
Low phos. forge crop	154.00 to	155.00
Low phos. punchings plate 1/4 in. and heavier	170.00 to	171.00
Low phos. 2 ft. and under	163.00 to	164.00
No. 1 RR hvy. melting	117.00 to	118.00
Scrap rails random lgth	140.00 to	141.00
Reroller rails	154.00 to	155.00
Rails, 2 ft. and under	164.00 to	165.00
RR couplers and knuckles	133.00 to	134.00
RR car axles	158.00 to	159.00
No. 1 machinery cast	128.00 to	129.00
Cupola cast	108.00 to	109.00
Stove plate	128.00 to	129.00
Steel car wheels	144.00 to	145.00
Stainless		
18-8 bundles and solids	1,150.00 to	1,160.00
18-8 turnings	1,000.00 to	1,010.00
430 bundles and solids	240.00 to	250.00
430 turnings	155.00 to	165.00

Philadelphia

No. 1 hvy. melting	$ 95.00 to	$ 98.00
No. 2 hvy. melting	85.00 to	88.00
No. 1 dealer bundles	134.00 to	137.00
No. 2 dealer bundles	65.00 to	68.00
No. 1 busheling	127.00 to	130.00
Shredder scrap	120.00 to	123.00
Machine shop turnings	29.00 to	32.00
Mixed borings and turnings	29.00 to	32.00
Shoveling turnings	50.00 to	53.00
Low phos. 5 ft. and under	117.00 to	120.00
Low phos. 2 ft. punchings	140.00 to	143.00
Electric furnace bundles	134.00 to	137.00
RR specialties	124.00 to	127.00
Rails, 2 ft. and under	145.00 to	148.00
Cupola cast	99.00 to	102.00
Heavy breakable cast	52.00 to	55.00
No. 1 machinery cast	110.00 to	113.00

Detroit

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 73.00 to	$ 74.00
No. 2 hvy. melting	71.00 to	72.00
No. 1 dealer bundles	117.00 to	118.00
No. 2 bundles	52.00 to	53.00
No. 1 busheling	115.00 to	116.00
Drop forge flashings	67.00 to	68.00
Machine shop turnings	51.00 to	52.00
Mixed borings and turnings	23.00 to	24.00
Shoveling turnings	51.00 to	52.00
Cast iron borings	57.00 to	58.00
Heavy breakable cast	41.00 to	42.00
Mixed cupola cast	58.00 to	59.00
Automobile cast	80.00 to	81.00
Stainless		
18-8 bundles and solids	1,090.00 to	1,100.00
18-8 turnings	700.00 to	710.00
430 bundles and solids	235.00 to	245.00

Youngstown

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to	$ 96.00
No. 2 hvy. melting	86.00 to	87.00
No. 1 dealer bundles	118.00 to	119.00
No. 2 dealer bundles	55.00 to	56.00
Machine shop turnings	45.00 to	46.00
Shoveling turnings	45.00 to	46.00
Low phos. plate	120.00 to	121.00
Electric furnace bundles	121.00 to	122.00
Galvanized bundles	119.00 to	120.00

Cleveland

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 89.00 to	$ 90.00
No. 2 hvy. melting	79.00 to	80.00
No. 1 dealer bundles	118.00 to	119.00
No. 1 factory bundles	122.00 to	123.00
No. 2 bundles	49.00 to	50.00
No. 1 busheling	114.00 to	115.00
Machine shop turnings	48.00 to	49.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	48.00 to	49.00
Cut structural & plates, 5 ft. and under	103.00 to	104.00
Cut structural & plates, 2 ft. and under	130.00 to	131.00
Low phos. punchings plate	136.00 to	137.00
Foundry steel, 2 ft. & under	81.00 to	82.00
No. 1 RR hvy. melting	96.00 to	97.00
Rails, 2 ft. and under	145.00 to	146.00
Rails, 18 in. and under	147.00 to	148.00
No. 1 machinery cast	84.00 to	85.00
Mixed cast	49.00 to	50.00
Stainless		
18-8 bundles	1,095.00 to	1,105.00
18-8 turnings	705.00 to	715.00
430 bundles	240.00 to	250.00

Buffalo

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 85.00 to	$ 86.00
No. 2 hvy. melting	77.00 to	78.00
No. 1 busheling	115.00 to	116.00
No. 1 dealer bundles	115.00 to	116.00
No. 2 bundles	43.00 to	44.00
Machine shop turnings	26.00 to	27.00
Mixed borings and turnings	26.00 to	27.00
Shoveling turnings	32.00 to	33.00
Cast iron borings	34.00 to	35.00
Low phos. plate	116.00 to	117.00
Structural and plate, 2 ft. and under	130.00 to	131.00
Rails, 2 ft. and under	134.00 to	135.00
Scrap rails, random lgth	109.00 to	110.00
No. 1 machinery cast	104.00 to	105.00
No. 1 cupola cast	87.00 to	88.00

St. Louis

No. 1 hvy. melting	$ 94.00 to	$ 95.00
No. 2 hvy. melting	74.00 to	75.00
No. 1 busheling	119.00 to	120.00
No. 1 dealer bundles	122.00 to	123.00
No. 2 bundles	77.00 to	78.00
Machine shop turnings	49.00 to	50.00
Shoveling turnings	53.00 to	54.00
Cast iron borings	57.00 to	58.00
No. 1 RR hvy. melting	113.00 to	114.00
Rails, random length	113.00 to	114.00
Rails, 5 ft. and under	123.00 to	124.00
Plate and structural, 5 ft. and under	113.00 to	114.00
Cupola cast	89.00 to	90.00
Heavy breakable cast	43.00 to	44.00
Stove plate	112.00 to	113.00
Steel car wheels	122.00 to	123.00
Rerolling rails	130.00 to	131.00
Unstripped motor blocks	66.00 to	67.00

Birmingham

No. 1 hvy. melting	$ 94.00 to	$ 95.00
No. 2 hvy. melting	90.00 to	91.00
No. 1 dealer bundles	99.00 to	100.00
No. 2 bundles	77.00 to	78.00
No. 1 busheling	99.00 to	100.00
Shredder scrap	119.00 to	120.00
Machine shop turnings	40.00 to	41.00
Shoveling turnings	53.00 to	54.00
Cast iron borings	34.00 to	35.00
Electric furnace bundles	84.00 to	85.00
Elec. furnace, 3 ft. & under	99.00 to	100.00
Structural and plate, 2 ft.	134.00 to	135.00
Structural and plate, 4 ft.	124.00 to	125.00
No. 1 RR hvy. melting	124.00 to	125.00
Scrap rails, random lgth	121.00 to	122.00
Rails, 2 ft. and under	145.00 to	146.00
Angles and splice bars	124.00 to	125.00
No. 1 cupola cast	101.00 to	102.00
Unstripped motor blocks	93.00 to	94.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 86.00 to	$ 87.00
No. 2 hvy. melting	81.00 to	82.00
No. 1 dealer bundles	102.00 to	103.00
No. 2 bundles	55.00 to	56.00
No. 1 busheling	107.00 to	108.00
Machine shop turnings	28.00 to	29.00
Shoveling turnings	37.00 to	38.00
Cast iron borings	40.00 to	41.00
Low phos. 18 in. and under	123.00 to	124.00
Rails, random length	100.00 to	101.00
Rails, 2 ft. and under	123.00 to	124.00
No. 1 cupola cast	89.00 to	90.00
Heavy breakable cast	54.00 to	55.00
Drop broken cast	95.00 to	96.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 72.00
No. 2 hvy. melting	62.00 to	63.00
No. 2 dealer bundles	35.00 to	37.00
Mixed borings and turnings	10.00 to	11.00
Shoveling turnings	10.00 to	12.00
Clean cast, chem. borings	37.00 to	38.00
No. 1 machinery cast	80.00 to	81.00
Mixed yard cast	53.00 to	54.00
Heavy breakable cast	17.00 to	19.00
Stainless		
18-8 prepared solids	870.00 to	890.00
18-8 turnings	540.00 to	560.00
430 prepared solids	230.00 to	240.00
430 solids	235.00 to	245.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 72.00
No. 2 hvy. melting	60.00 to	62.00
No. 1 dealer bundles	88.00 to	90.00
No. 2 bundles	33.00 to	35.00
No. 1 busheling	83.00 to	85.00
Shredder scrap	78.00 to	80.00
Machine shop turnings	18.00 to	20.00
Shoveling turnings	23.00 to	25.00
No. 1 machinery cast	85.00 to	87.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	22.00 to	24.00

San Francisco

No. 1 hvy. melting	$ 63.00 to	$ 65.00
No. 2 hvy. melting	57.00 to	59.00
No. 1 dealer bundles	55.00 to	57.00
No. 2 dealer bundles	43.00 to	44.00
Machine shop turnings	15.00 to	16.00
Cast iron borings	15.00 to	16.00
No. 1 cupola cast	87.00 to	89.00

Los Angeles

No. 1 hvy. melting	$ 73.00 to	$ 75.00
No. 2 hvy. melting	67.00 to	69.00
No. 1 dealer bundles	65.00 to	67.00
No. 2 dealer bundles	47.00 to	49.00
Machine shop turnings	17.00 to	18.00
Shoveling turnings	18.00 to	19.00
Cast iron borings	18.00 to	19.00
Elec. furnace, 1 ft. and under (foundry)	80.00 to	82.00
No. 1 cupola cast	84.00 to	86.00

Seattle

No. 1 hvy. melting	$ 94.00 to	$ 95.00
No. 2 hvy. melting	84.00 to	85.00
No. 2 bundles	69.00 to	70.00
No. 1 cupola cast	99.00 to	100.00
Mixed yard cast	85.00 to	87.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 98.00
No. 2 hvy. melting, cut 2 ft. and under	85.00
No. 1 dealer bundles	118.00
No. 2 bundles	74.00
Mixed steel scrap	68.00
Bush. new fact. prep'd	113.00
Bush. new fact. unprep'd	89.00
Machine shop turnings	29.00
Short steel turnings	29.00
Mixed borings and turning	23.00
Cast scrap	97.00

Houston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 94.00 to	$ 95.00
No. 2 hvy. melting	84.00 to	85.00
No. 2 bundles	49.00 to	50.00
Machine shop turnings	37.00 to	38.00
Crushed turnings	47.00 to	48.00
Shredder scrap	102.00 to	103.00
Cut structural plate, 2 ft. and under	119.00 to	120.00
Cut structural plate, 5 ft. and under	110.00 to	111.00
Unstripped motor blocks	60.00 to	61.00
Cupola cast	95.00 to	96.00

JULY

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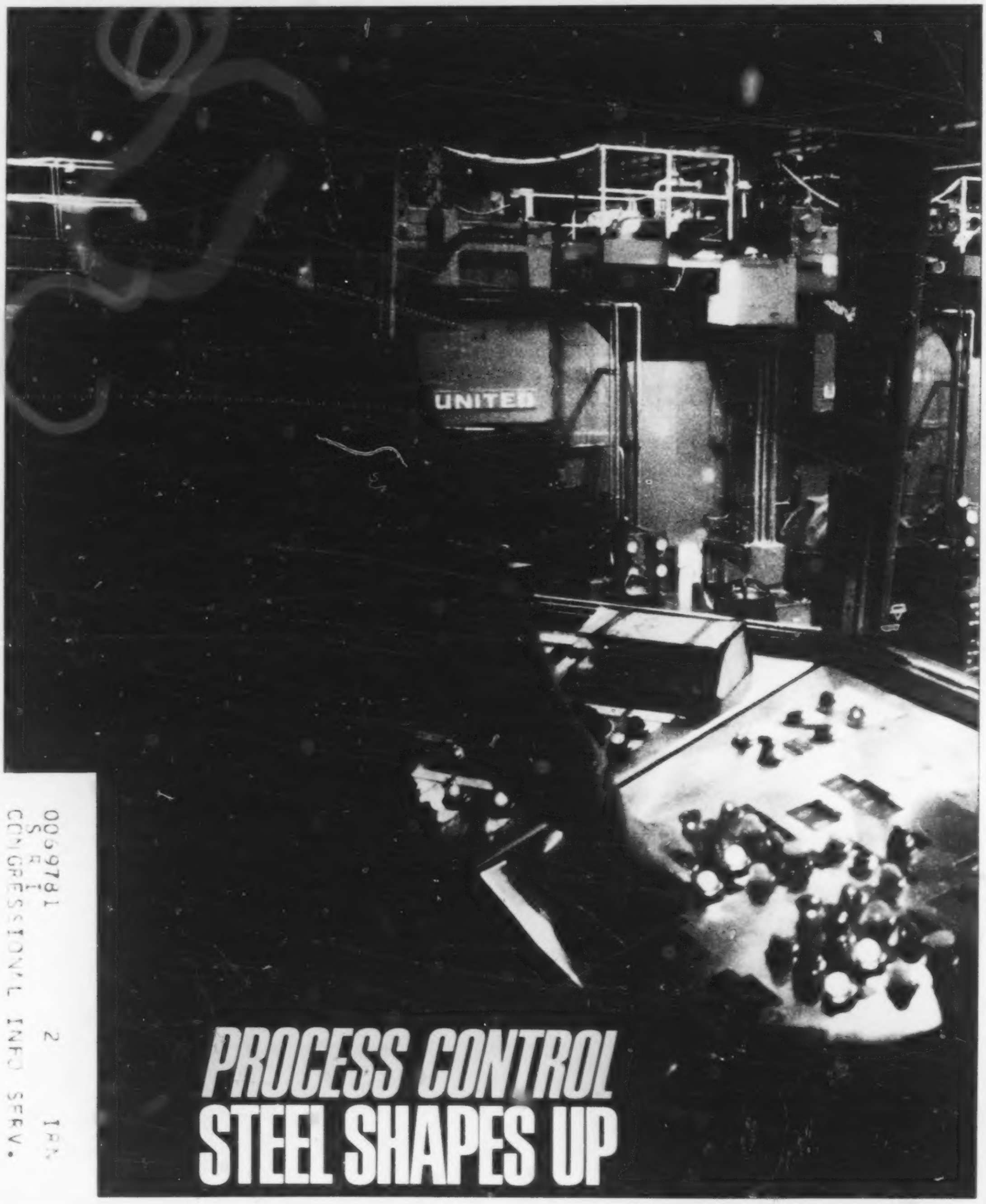
IRON AGE

THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

A Fairchild Business Publication

JULY 1988



PROCESS CONTROL
STEEL SHAPES UP

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PLUS NATIONAL STEEL'S 'DETROIT' STRATEGY

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IRON AGE

JULY 1988

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EDITORIAL

WHERE'S THE OTHER SHOE?

I don't know about you, but the recent brouhaha over the trade bill left me a little irritated and dissatisfied.

After years of posturing, our lawmakers finally put together a package on trade, which included the now infamous plant closings bill, and shipped it off to the President. The game plan, if there was one, seemed to be: Give it to the big guy, let him reject it, then we've got an issue for the campaign.

Too bad. The real issue at the heart of both the trade bill and the plant closings bill was jobs—American jobs—but it got lost in the scramble.

In other words, the boys on the Potomac needed to drop a shoe that would wake the voters. Their re-election—their job—is now at stake and they're letting us know they want to keep it.

None of this is new. But it leads me to wonder what they will do with the other horn of our economic dilemma—namely the huge and ever-growing Federal budget deficit.

When Wall Street went into a tailspin last October, there was much posturing and some work. Eventually, each side gave up a few bucks and went back to business as usual.

Unfortunately, the mortgage on the future continues to grow, the foreign funds we have been using to finance it are dwindling month-by-month, and interest rates are on the rise because the government needs some method, besides printing more money, to finance this public largesse.

Now, I'm not naive enough to think that an unsexy issue like the budget deficit would be attractive in an election year. There are easier matters to explain to the great unwashed.

But as long as our government continues to outspend its income and demand more and more of the limited capital available in the marketplace, there's a very obvious disincentive to continued economic growth. If we carry this kind of debt with us into the next economic eclipse, it could be a long time before we again see daylight.

So, I guess I just can't help wondering: When they drop the other shoe, what it will sound like?

BY MICHAEL MARLEY

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MATERIALS PRICES

PRICE & PRODUCTION DATA

(Effective June 6, 1988)

Steel production by districts, thousands of tons
(000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	280	278	276	223
Pittsburgh	204	206	204	191
Youngstown	129	118	127	107
Lake Erie	162	170	170	130
Detroit	160	170	171	148
Chicago	533	560	559	476
Midwest	183	194	203	189
Southern	218	222	232	185
Western	100	101	104	53
U.S. Production	1,969	2,019	2,046	1,702

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 37.344*
Pellets (per iron unit natural)	gross-ton 46.84-59.4**
Pellets (per iron unit natural)	gross-ton 72.45-86.9***
Mesabi, regular-unscreened	gross-ton 32.53
Mesabi, non-bessemer	gross-ton 30.03-31.53

*37.344¢—U.S. Steel, 5/20/87, FOB Mount Iron, Minn. **46.84¢—Inland Steel Mining, 1/1/87. 58.0¢—Mineral Services, 8/13/85. 59.4¢—Pickands Mather, 8/1/85, delivered hold of vessel, upper Lake ports. ***72.45¢—Cleveland-Cliffs, 12/30/86. Oglebay Norton, 3/1/87. 86.9¢—Hanna Mining, 2/26/82.

STEEL PRODUCTION, COMPOSITE PRICES

(Effective June 6, 1988)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1988	To Date 1987
Net tons, in thousands	1,969	2,019	43,538	35,045
Capability Utilization Rate	91.9	94.2	91.1	73.5

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 4/3/88)	24.333	24.333	24.333	25.236
Pig Iron** (Net ton= 2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 102.83	$ 102.83	$ 105.17	$ 77.17
No. 2 bundles	$ 70.50	$ 70.50	$ 72.17	$ 52.83

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh	$ 104.50	$ 104.50	$ 107.50	$ 82.50
No. 1 steel, Philadelphia	96.50	96.50	96.50	71.50
No. 1 steel, Chicago	107.50	107.50	111.50	77.50
No. 1 bundles, Detroit	108.50	109.50	117.50	90.50
Low Phos., Youngstown	115.50	115.50	120.50	87.50
No. 1 mach'y cast., Pgh	98.50	98.50	98.50	81.50
No. 1 mach'y cast., Phila	111.50	111.50	111.50	93.50
No. 1 mach'y cast., Chi	128.50	128.50	128.50	101.50

*Finished Steel Composite: Weighted index of steel bars, structurals, plates, rails, hot rolled and cold rolled sheets.
**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.
***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective June 6, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	117.00	116.00	6/6/88
Copper (C)	115.00	103.00	6/3/88
Lead	36.00	34.00	5/23/88
Magnesium Ingot	153.00	148.00	12/9/85
Nickel (LME)	625.00	587.00	6/6/88
Zinc	63.00	60.00	6/3/88

ALUMINUM: Avg. for last week & previous week. COPPER (C)=cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$260.00
Beryllium-copper strip No. 25, per lb.Be	$8.00
Beryllium powder SP200F, per lb.	$244.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz.	$464.55
Indium, per troy oz.	$9.95
Iridium, per troy oz.	$325.00
Magnesium sticks, 10,000 lbs.	$2.12
Mercury, per 76-lb., f.o.b. N.Y.	$348.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz.	$133.00
Platinum, per troy oz.	$613.00
Rhodium, per troy oz.	$1,235.00
Silver ingots per troy oz.	$7.33
Titanium [illegible]ne, melt grade	$4.00
Tungste[illegible]er, hyd red	$9.53-9.85
Vanadi[illegible]	$6.00
Zirconium sp[illegible]e	$11.20-17.00

(Per lb. unless [illegible]herwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

May 30—314.00
May 31—312.00
June 1—315.00
June 2—316.00
June 3—316.00

Scrap Prices
Brass Mill Scrap

(Cents per lb.; over 20,000 lbs. add 1¢ per lb.)

	Solids	Turnings
Copper	84	79
Yellow brass	72	71
Red brass	66½	62½
Comm. bronze	68½	63½
Mang. bronze	48½	47½
Free cutting rod ends	63½	62½

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	83
No. 2 copper wire	73
Light copper	67

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	74
No. 2 copper wire	65
Light copper	58
No. 1 composition	57
No. 1 comp. turnings	57
Hvy. yellow brass solids	41
Hvy. yellow brass turnings	35
Radiators	37

Aluminum

New mixed clips	64	— 65
Old sheet	53	— 54
Old cast	55	— 56
Clean dry borings	45	— 46

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	56	— 57
Mixed L.C. clips	55	— 56
Old sheets and cast	46	— 47
Borings and turnings	38	— 39
Duraluminum clippings	47	— 48

Copper and Brass

No. 1 copper wire	69	— 71
No. 2 copper wire	59	— 60
Light copper	53	— 54
Radiators	37	— 38
No. 1 composition	57	— 58
No. 1 composition turnings	53	— 54
Cocks and faucets	47	— 48
Clean heavy yellow brass	43	— 44
Brass pipe	51	— 52
New soft brass clippings	63	— 64

Lead

Heavy soft lead	13	— 14
Whole batteries	2	— 3
Type metal	21	— 22
Electrotype	13	— 14

Nickel

Nickel solids	445	—455
Nickel rod ends	438	—448
Nickel sheets, clips	428	—438
Nickel turnings	254	—274

Zinc

New zinc clippings	18	— 19
Old diecast zinc	14	— 15

EFFECTIVE JUNE 6, 1988

(Effective June 6, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 104.00 to	$ 105.00
No. 2 hvy. melting	94.00 to	95.00
No. 1 dealer bundles	125.00 to	126.00
No. 1 factory bundles (auto)	134.00 to	135.00
No. 2 bundles	64.00 to	65.00
No. 1 busheling	129.00 to	130.00
Machine shop turnings	25.00 to	26.00
Shoveling turnings	69.00 to	70.00
Cast iron borings	68.00 to	69.00
Low phos. punchings plate	142.00 to	143.00
Heavy turnings	97.00 to	98.00
No. 1 RR hvy. melting	130.00 to	131.00
Rails, 2 ft. and under	148.00 to	149.00
Scrap rails, random lgth	137.00 to	138.00
RR specialties	138.00 to	139.00
No. 1 machinery cast	98.00 to	99.00
Cupola cast	90.00 to	91.00
Heavy breakable cast	40.00 to	41.00
Stainless		
18-8 bundles and solids	1,290.00 to	1,300.00
18-8 turnings	1,190.00 to	1,200.00

Chicago

No. 1 hvy. melting	$ 107.00 to	$ 108.00
No. 2 hvy. melting	104.00 to	105.00
No. 1 dealer bundles	115.00 to	116.00
No. 1 factory bundles (auto)	131.00 to	132.00
No. 2 dealer bundles	80.00 to	81.00
No. 1 busheling	119.00 to	120.00
Shredder scrap	120.00 to	121.00
Machine shop turnings	51.00 to	52.00
Mixed borings and turnings	43.00 to	44.00
Shoveling turnings	60.00 to	61.00
Cast iron borings	66.00 to	67.00
Low phos. forge crop	154.00 to	155.00
Low phos. punchings plate 1/4 in. and heavier	170.00 to	171.00
Low phos. 2 ft. and under	163.00 to	164.00
No. 1 RR hvy. melting	112.00 to	113.00
Scrap rails random lgth	140.00 to	141.00
Reroller rails	154.00 to	155.00
Rails, 2 ft. and under	164.00 to	165.00
RR couplers and knuckles	133.00 to	134.00
RR car axles	158.00 to	159.00
No. 1 machinery cast	128.00 to	129.00
Cupola cast	108.00 to	109.00
Stove plate	128.00 to	129.00
Steel car wheels	144.00 to	145.00
Stainless		
18-8 bundles and solids	1,150.00 to	1,160.00
18-8 turnings	1,000.00 to	1,010.00
430 bundles and solids	240.00 to	250.00
430 turnings	155.00 to	165.00

Philadelphia

No. 1 hvy. melting	$ 95.00 to	$ 98.00
No. 2 hvy. melting	85.00 to	88.00
No. 1 dealer bundles	127.00 to	130.00
No. 2 dealer bundles	65.00 to	68.00
No. 1 busheling	122.00 to	125.00
Shredder scrap	120.00 to	123.00
Machine shop turnings	29.00 to	32.00
Mixed borings and turnings	29.00 to	32.00
Shoveling turnings	50.00 to	53.00
Low phos. 5 ft. and under	115.00 to	118.00
Low phos. 2 ft. punchings	137.00 to	140.00
Electric furnace bundles	127.00 to	130.00
RR specialties	124.00 to	127.00
Rails, 2 ft. and under	145.00 to	148.00
Cupola cast	102.00 to	105.00
Heavy breakable cast	52.00 to	55.00
No. 1 machinery cast	110.00 to	113.00

Detroit

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 69.00 to	$ 70.00
No. 2 hvy. melting	67.00 to	68.00
No. 1 dealer bundles	108.00 to	109.00
No. 2 bundles	51.00 to	52.00
No. 1 busheling	106.00 to	107.00
Drop forge flashings	64.00 to	65.00
Machine shop turnings	51.00 to	52.00
Mixed borings and turnings	23.00 to	24.00
Shoveling turnings	51.00 to	52.00
Cast iron borings	57.00 to	58.00
Heavy breakable cast	41.00 to	42.00
Mixed cupola cast	58.00 to	59.00
Automobile cast	80.00 to	81.00
Stainless		
18-8 bundles and solids	1,090.00 to	1,100.00
18-8 turnings	690.00 to	700.00
430 bundles and solids	220.00 to	230.00

Youngstown

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 89.00 to	$ 90.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 dealer bundles	110.00 to	111.00
No. 2 dealer bundles	51.00 to	52.00
Machine shop turnings	45.00 to	46.00
Shoveling turnings	45.00 to	46.00
Low phos. plate	115.00 to	116.00
Electric furnace bundles	113.00 to	114.00
Galvanized bundles	111.00 to	112.00

Cleveland

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 83.00 to	$ 84.00
No. 2 hvy. melting	75.00 to	76.00
No. 1 dealer bundles	110.00 to	111.00
No. 1 factory bundles	104.00 to	105.00
No. 2 bundles	45.00 to	46.00
No. 1 busheling	107.00 to	108.00
Machine shop turnings	48.00 to	49.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	48.00 to	49.00
Cut structural & plates, 5 ft. and under	98.00 to	99.00
Cut structural & plates, 2 ft. and under	125.00 to	126.00
Low phos. punchings plate	131.00 to	132.00
Foundry steel, 2 ft. & under	78.00 to	79.00
No. 1 RR hvy. melting	94.00 to	95.00
Rails, 2 ft. and under	143.00 to	144.00
Rails, 18 in. and under	147.00 to	148.00
No. 1 machinery cast	84.00 to	85.00
Mixed cast	49.00 to	50.00
Stainless		
18-8 bundles	1,095.00 to	1,105.00
18-8 turnings	695.00 to	705.00
430 bundles	225.00 to	235.00

Buffalo

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 85.00 to	$ 86.00
No. 2 hvy. melting	77.00 to	78.00
No. 1 busheling	110.00 to	111.00
No. 1 dealer bundles	110.00 to	111.00
No. 2 bundles	43.00 to	44.00
Machine shop turnings	26.00 to	27.00
Mixed borings and turnings	26.00 to	27.00
Shoveling turnings	32.00 to	33.00
Cast iron borings	34.00 to	35.00
Low phos. plate	116.00 to	117.00
Structural and plate, 2 ft. and under	125.00 to	126.00
Rails, 2 ft. and under	128.00 to	129.00
Scrap rails, random lgth	109.00 to	110.00
No. 1 machinery cast	104.00 to	105.00
No. 1 cupola cast	87.00 to	88.00

St. Louis

No. 1 hvy. melting	$ 88.00 to	$ 89.00
No. 2 hvy. melting	68.00 to	69.00
No. 1 busheling	116.00 to	117.00
No. 1 dealer bundles	122.00 to	123.00
No. 2 bundles	71.00 to	72.00
Machine shop turnings	46.00 to	47.00
Shoveling turnings	50.00 to	51.00
Cast iron borings	57.00 to	58.00
No. 1 RR hvy. melting	113.00 to	114.00
Rails, random length	113.00 to	114.00
Rails, 5 ft. and under	123.00 to	124.00
Plate and structural, 5 ft. and under	113.00 to	114.00
Cupola cast	89.00 to	90.00
Heavy breakable cast	43.00 to	44.00
Stove plate	112.00 to	113.00
Steel car wheels	122.00 to	123.00
Rerolling rails	130.00 to	131.00
Unstripped motor blocks	66.00 to	67.00

Birmingham

No. 1 hvy. melting	$ 91.00 to	$ 92.00
No. 2 hvy. melting	87.00 to	88.00
No. 1 dealer bundles	96.00 to	97.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	96.00 to	97.00
Shredder scrap	117.00 to	118.00
Machine shop turnings	38.00 to	39.00
Shoveling turnings	51.00 to	52.00
Cast iron borings	32.00 to	33.00
Electric furnace bundles	81.00 to	82.00
Elec. furnace, 3 ft. & under	96.00 to	97.00
Structural and plate, 2 ft.	131.00 to	132.00
Structural and plate, 4 ft.	119.00 to	120.00
No. 1 RR hvy. melting	119.00 to	120.00
Scrap rails, random lgth.	116.00 to	117.00
Rails, 2 ft. and under	141.00 to	142.00
Angles and splice bars	124.00 to	125.00
No. 1 cupola cast	101.00 to	102.00
Unstripped motor blocks	89.00 to	90.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 82.00 to	$ 83.00
No. 2 hvy. melting	77.00 to	78.00
No. 1 dealer bundles	96.00 to	97.00
No. 2 bundles	51.00 to	52.00
No. 1 busheling	102.00 to	103.00
Machine shop turnings	28.00 to	29.00
Shoveling turnings	37.00 to	38.00
Cast iron borings	40.00 to	41.00
Low phos. 18 in. and under	118.00 to	119.00
Rails, random length	95.00 to	96.00
Rails, 2 ft. and under	118.00 to	119.00
No. 1 cupola cast	87.00 to	88.00
Heavy breakable cast	54.00 to	55.00
Drop broken cast	93.00 to	94.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 71.00 to	$ 73.00
No. 2 hvy. melting	63.00 to	64.00
No. 2 dealer bundles	35.00 to	37.00
Mixed borings and turnings	10.00 to	11.00
Shoveling turnings	10.00 to	12.00
Clean cast, chem. borings	37.00 to	38.00
No. 1 machinery cast	81.00 to	82.00
Mixed yard cast	53.00 to	54.00
Heavy breakable cast	18.00 to	20.00
Stainless		
18-8 prepared solids	920.00 to	940.00
18-8 turnings	580.00 to	600.00
430 prepared solids	270.00 to	290.00
430 solids	275.00 to	285.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 72.00
No. 2 hvy. melting	60.00 to	62.00
No. 1 dealer bundles	88.00 to	90.00
No. 2 bundles	33.00 to	35.00
No. 1 busheling	83.00 to	85.00
Shredder scrap	78.00 to	80.00
Machine shop turnings	18.00 to	20.00
Shoveling turnings	23.00 to	25.00
No. 1 machinery cast	85.00 to	87.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	22.00 to	24.00

San Francisco

No. 1 hvy. melting	$ 63.00 to	$ 65.00
No. 2 hvy. melting	57.00 to	59.00
No. 1 dealer bundles	55.00 to	57.00
No. 2 dealer bundles	43.00 to	44.00
Machine shop turnings	15.00 to	16.00
Cast iron borings	15.00 to	16.00
No. 1 cupola cast	87.00 to	89.00

Los Angeles

No. 1 hvy. melting	$ 73.00 to	$ 75.00
No. 2 hvy. melting	67.00 to	69.00
No. 1 dealer bundles	65.00 to	67.00
No. 2 dealer bundles	47.00 to	49.00
Machine shop turnings	17.00 to	18.00
Shoveling turnings	18.00 to	19.00
Cast iron borings	18.00 to	19.00
Elec. furnace, 1 ft. and under (foundry)	80.00 to	82.00
No. 1 cupola cast	84.00 to	86.00

Seattle

No. 1 hvy. melting	$ 94.00 to	$ 95.00
No. 2 hvy. melting	84.00 to	85.00
No. 2 bundles	69.00 to	70.00
No. 1 cupola cast	104.00 to	105.00
Mixed yard cast	85.00 to	87.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 hvy. melting	$ 95.00
No. 2 hvy. melting, cut 2 ft. and under	82.00
No. 1 dealer bundles	116.00
No. 2 bundles	66.00
Mixed steel scrap	68.00
Bush. new fact. prep'd	113.00
Bush. new fact. unprep'd	89.00
Machine shop turnings	36.00
Short steel turnings	36.00
Mixed borings and turning	23.00
Cast scrap	97.00

Houston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 91.00 to	$ 92.00
No. 2 hvy. melting	81.00 to	82.00
No. 2 bundles	47.00 to	48.00
Machine shop turnings	37.00 to	38.00
Crushed turnings	47.00 to	48.00
Shredder scrap	99.00 to	100.00
Cut structural plate, 2 ft. and under	116.00 to	117.00
Cut structural plate, 5 ft. and under	107.00 to	108.00
Unstripped motor blocks	60.00 to	61.00
Cupola cast	95.00 to	96.00

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IRON AGE

THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

A Fairchild Business Publication

AUGUST 1988

THE NEW AGE OF IRONMAKING

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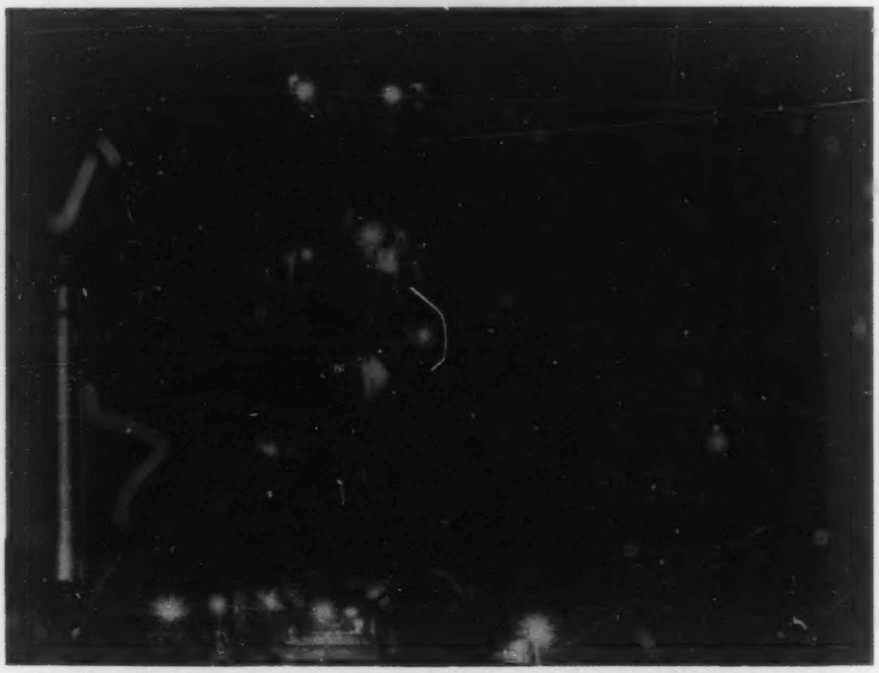
AUGUST 1988



Wheeling-Pittsburgh's No. 5 blast furnace lights up the morning sky at Mingo Junction.

The New Age of Ironmaking

A special Iron Age three-part report details the vast changes underway in the hot end of the steel industry, starting with blast furnace relines (p.14), an update on refractories (p. 22) and a report on the industry's search for a new ironmaking process (p. 29).

MARKET INDICATORS

The export market is keeping the U.S economy on the growth track. —*P. 5*

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The industry wants to pump more metal from its big ironmakers. —*P. 14*

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Now, they're talking about endless campaigns. —*P.22*

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An AISI task force suggests a far-reaching research program. —*P.29*

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Truck deregulation hits a Congressional roadblock

(FNS)--A 160-member coalition, including several metals industry firms, having so far failed to persuade key congressmen to consider truck deregulation, has kicked off a grassroots consumer campaign to turn up the political heat on the reluctant lawmakers.

At stake is hardly some abstract truck law. "If the U.S. is to be competitive against foreign nations it must be competitive at home, first," said Matt Scocozza, the U.S. Department of Transportation's (DOT) assistant secretary.

"Whether we're talking about steel, other heavy industries, or food, we have the chance to give our manufacturers an advantage against foreign producers," Mr. Scocozza told reporters at a news conference held by Americans for Safe and Competitive Trucking.

"Right now," he said, "when foreign-produced goods, such as steel, are imported they average two truck shipments before reaching their ultimate consumer. Often the same product, made domestically, must move six or seven times."

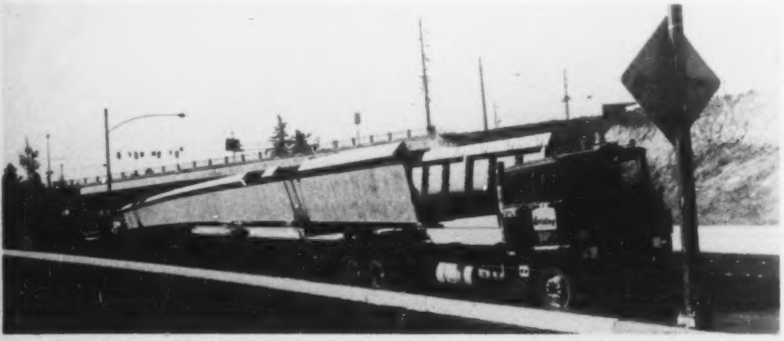
Each freight movement tacks on extra costs to the product given the peculiarities of existing truck laws. In most cases, motor carrier companies can collude to set prices on long-distance shipments, as if two major steel companies were to meet to decide the price of their plate products. With every shipment, tariffs, or freight prices, must be filed with the U.S. Interstate Commerce Commission, although the agency no longer has authority to veto these rates, under provisions of the 1980 Motor Carrier Act.

While this law largely deregulated the trucking industry, reportedly saving about $60 billion annually, it left intact various onerous provisions, such as price-fixing antitrust immunity. It also permitted states to continue to regulate trucking. Consequently, states with a significant metal industry concentration, such as Texas, California, Pennsylvania and several in the Midwest, have imposed their own truck regulations.

Overall, the combination of such laws in 42 states and the vestiges of regulations not eliminated by the 1980 law, cost businesses about $30 billion annually, according to Con Hitchcock, an attorney with Public Citizen, a consumer group and coalition member.

To ameliorate this situation, the group is urging Congress to take up identical House and Senate bills (H.R. 2591 and S. 1710), that would eliminate all truck regulations, save for those relating to safety and insurance. They also would preempt state regulations.

However, Mr. Scocozza acknowledged that business and the Reagan Administration, which favors these bills, have run into a wall in seeking congressional action. Sen. Ernest Hollings (D-S.C.), the Senate Commerce Committee chairman, has declined to hold hearings on the bills and the committee's House counterpart will not act until Sen. Hollings does.



Steel and other industries carry the burden of trucking regulations.

USX selling rail and shipping operations to investment group

A new company is acquiring the transportation businesses of USX Corp.

Owned by Blackstone Capital Partners, the new company will be paying over $500 million for a system that includes 20,000 rail cars, 14 lake vessels, 305 barges and 27 tugboats. Headquarters will be near Pittsburgh.

The Blackstone Group was founded in 1985 by Peter G. Peterson, its chairman, and Stephen A. Schwarzman, its president. Mr. Peterson was formerly Secretary of Commerce.

In addition to Mr. Peterson and Mr. Schwarzman, the six general partners include David A. Stockman, former director of the Office of Management and Budget, and Roger C. Altman, former Assistant Secretary of the Treasury.

The sale ties in with the recent USX policy of divesting steel related assets and using the proceeds for diversification.

The latest transaction is a little surprising, however, because in the last year or so, steel companies have been having second thoughts about getting away from full integration. It is of interest that the prestigious Blackstone Group is attracted to a steel-based transportation network.

Correction

The first quarter earnings and sales of New Jersey Steel Corp. were incorrectly shown in metal industry sales/earnings table that appeared in the June issue of *Iron Age*.

The correct figures for the first quarter of 1988 were: Earnings, $3.9 million; sales, $25.2 million; earnings as a pct of sales, 15.5 pct; earnings increase over the first quarter of 1987, 144 pct. Sales were up 37 pct from the first quarter of 1987. In the first quarter of 1987, New Jersey Steel had a profit of $1.6 million and sales of $18.4 million.

Iron Age sincerely regrets the error.

BLAST FURNACES: MORE HEAT FROM THE HOT END

The steel industry is relining or rebuilding close to 40 pct of its active furnaces this year, with the hope of pumping more metal from its big ironmakers.

By the end of the 12-month period that began Jan. 1, 1988, some 20 blast furnaces in the U.S. and Canada will have been shut down for relining.

This adds up to an enormous outage. Close to 40 pct of the active U.S. blast furnaces will have been down at one time or another in 1988.

In the old days, standby furnaces would have filled in during the repairs. That standby capacity is supposedly gone, washed away by the cutbacks of the last six years.

All of which raises the question: Can North American steel mills pump enough iron to keep up with continued strong demand? It looks as though the mills will squeak by, but the next six months will provide a severe challenge for operators. According to one estimate, the relines will reduce steel output by 1.5 million tons in the second half.

Inland No. 7

The big No. 7 blast furnace of Inland Steel was shut down on Aug. 5, 1987 for relining. For every day the furnace was out of service, Inland lost 7,500 tons of badly needed iron.

Not surprisingly, the relining was done on a crash basis. Between 600 and 1,000 men and women worked two 10-hour shifts a day. The whole furnace, including the hearth, was relined. The middle section of the shell was replaced and the cooling system was improved.

The whole job was completed on Nov. 10, sixteen days ahead of schedule. The $30 million cost was $2.8 million under budget. The output of No. 7 after the construction was up to 9,000 tons a day.

These accomplishments were preceded by another crash program. This was initiated when Inland abandoned its original plan to reline portions of the No. 7 furnace with the Hoogovens system of graphite and cooling plates.

"Due to financial constraints, we opted to go to a more conventional lining," said Peter Whelan, a research engineer specializing in refractories. "Our engineering department asked us to come up with a conventional material that would be superior to the original lining."

THE NEW AGE OF
IRONMAKING

The refractories originally used into the lower stack of No. 7 had been unsatisfactory. "For the last four and a half years," said Mr. Whelan, "we were grouting on a continual basis because there was no refractory left in the lower stack.

"We knew that our basic failure mechanism was thermal shock," he said. "A lot of times alkali attack will influence a campaign. Abrasion is a factor. But our predominant destructive mechanism was thermal shock."

To check the shock resistance of different grades, Inland tried conventional tests first and then devised its own method. "It involved placing the refractory specimen in a 2,600°F atmosphere, holding it for 30 minutes, and placing one-half the specimen in water," said Mr. Whelan. "This caused a severe stress at the water line."

The shock treatment was tried on 70 to 80 aluminum silicate refractories from 40 to 50 suppliers. "Eighty-five to 90 pct of the specimens turned into rubble after just one application," said Mr. Whelan. "We did run into a series of refractories from several manufacturers that were able to withstand this shock test repeatedly."

It turned out that best results came from a refractory that was down the grade scale rather than up. "Believe it or not, this was a 50 pct alumina," said Mr. Whelan. "It is a semi-andalusite refractory."

Within this general area, Inland narrowed its candidates down to two specific grades. "Once we got down to either A or B, we did pretty severe alkali tests," said Mr. Whelan. "B totally vaporized in the alkali."

The other grade was impervious to alkali attack, and there was no difficulty making the final selection. "We pretty well knew which manufacturer (A.P. Green) we were working with," said Mr. Whelan. "There were some refinements made with grain sizing. The kiln setting was critical, too. If you overburn a refractory, you make it weak."

The testing and the refinements were completed in time for the reline of No. 7 furnace. "We came up with quite a viable product and it cost us less than the original lining in 1980," said Mr. Whelan.

On the big furnace, the new grade was used in the lower stack. "We're currently relining our No. 6 blast furnace," said Mr. Whelan. "The same refractory is being used. It's not just being used in the lower stack. It's being carried down to the carbon sidewalls."

He feels the new refractory will bring significant benefits to blast furnaces throughout the world.

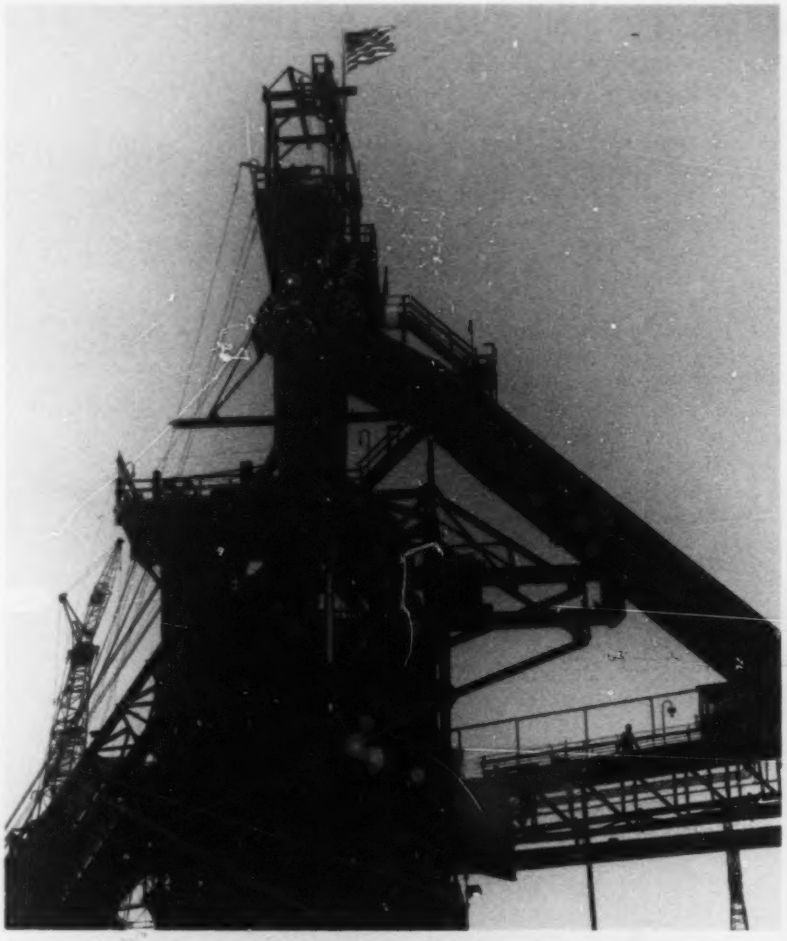
Endless Campaigns

With demand strong, most plants face the difficulty of relining and repairing blast furnaces without suffering excessive production losses.

This is a special problem for the Lake Erie Works of Stelco because the plant has only one blast furnace. "We planned to reline the furnace after a 10-year campaign," said R.N. Hill, division superintendent of operations at the Lake Erie Works. "The plan called for the second furnace to be in place."

The plan was altered by the market downturn, and the second furnace was never built. Accordingly, Stelco isn't waiting 10 years until a major rebuild requires a long outage. The company will avoid a big shutdown by making a series of interim repairs.

"Every four years—sometimes three years—we go down and repair a piece of the furnace," said Mr. Hill. "Our plan is to maintain



Armco installed a new top on its No. 3 furnace at Middletown (above) in order to run higher pressures in the furnace. Dofasco's rebuilding of its No. 4 blast furnace included extensive use of graphitic refractories and Hoogovens cooling plates.

everything external to the furnace shell between these interim repairs. Stove valves, gas cleaning, the Paul Wurth top we can repair during normal maintenance."

One interim repair was scheduled for the summer of 1988, after eight years and 9 million metric tons of what had been planned as a 10-year campaign.

"Iron to iron, we'll be down 33 days," said Mr. Hill in late June. "The current repair will consist of replacing four rows of staves. We're going to replace the hearth walls, the tuyere breast, and we're going to rebrick the bosh. We may do some gunning in the upper stack. We hope we don't have to.

"We're going to replace the Paul Wurth top," he added. "That's a preventive thing; the top isn't in any distress." All the refractory replacements will be in-kind.

The Lake Erie plant has been able to accumulate enough slabs to run its strip mill for two weeks of the blast furnace shutdown.

Middletown No. 3

In October 1984, the No. 3 furnace of Armco's Middletown plant began operating after an extensive rebuilding project. The furnace was the first in North America to make full use of the Hoogovens graphite lining.

"It's a combination of graphite and semi-graphite," said John Duncan, superintendent of the No. 3 furnace. "The graphite is located in contact with the cooling plates. The semi-graphite is in between.

"The graphite and semi-graphite go all the way up the bosh to just beneath the flair of the furnace," said Mr. Duncan. (There is carbon in the tuyere jacket.)

"We chose to put silicon carbide on the hot face in the mid-stack and continued that up the stack until we reached an elevation 15 ft below the large bell," he said. "That was an Armco decision. We chose to go to silicon carbide. That seems to be beneficial."

Productivity of No. 3 furnaces has steadily increased since the rebuilding. "For the month of May, that furnace averaged 8.16 tons per 100 cu ft of working volume,"

How North American Blast Furnaces Stack Up...

Company and Location	Furnace Number /Name	Hearth Diam. (ft/in.)	Working Volume (Mcf)	Yearly Production (Net Tons)	Reline Date
Acme Steel					
Chicago, Ill.	A	25'3"	41.4	876,000	1/85
	B	19'8"	27.0	438,000	Idle
Algoma Steel					
Sault Ste. Marie, Ont.	4	17'3"	17.0	400,000	1992
	6	27'0"	45.6	950,000	1989
	7	35'0"	88.2	1,800,000	1988
Armco					
Ashland, Ky.	Amanda	33'5"	70.5	1,277,500	1989
	Bellefonte	28'9"	50.7	912,500	1988
Middletown, Ohio	1	18'6"	22.9	440,000	—
	3	29'6"	52.4	1,405,000	—
Bethlehem Steel					
Bethlehem, Pa.	B	30'0"	—	—	—
	C	27'11"	49.7	1,095,000	Banked
	D	30'0"	54.9	949,000	—
	E	24'0"	—	—	Idle
Burns Harbor, Ind.	C	38'3"	88.8	2,618,875	1988
	D	35'0"	88.7	2,498,425	1991
Sparrows Point, Md.	H	30'0"	54.8	1,132,000	—
	J	30'0"	54.5	1,278,000	Idle
	K	30'0"	54.6	1,132,000	Idle
	L	45'0"	130.4	3,398,000	1990
Dofasco					
Hamilton, Ont.	1	20'9"	31.8	910,000	1990
	2	20'9"	32.6	910,000	1988
	3	21'6"	31.9	910,000	1989
	4	28'0"	56.3	1,633,000	1994
Geneva Steel					
Geneva, Utah	1	26'6"	43.7	730,000	1988*
	2	26'6"	43.7	730,000	1988*
	3	26'6"	43.7	730,000	1990*
* Bosh					
Gulf States Steel					
Gadsden, Ala.	1	17'0"	—	—	Idle
	2	26'0"	45.6	900,000	1988*
* Bottom, Bosh and Stack					
Inland Steel					
Indiana Harbor, Ind.	1	20'9"	30.9	438,000	Idle
	2	19'10"	24.7	365,000	Idle
	3	21'6"	—	—	Idle
	4	20'10"	—	—	Idle
	5	26'6"	46.0	839,500	1990
	6	26'6"	46.0	839,500	Present
	7	45'0"	123.9	2,920,000	1987
	A	26'6"	46.1	839,500	1990*
	B	26'6"	46.1	803,000	1990**
* Blown in from complete reline 11/77; Blown in from stack reline 2/83					
** Blown in from stack reline 3/80; Blown in from hearth reline 8/87					
LTV Steel					
Cleveland, Ohio	C-1	27'6"	—	—	1988
	C-2	27'0"	44.9	1,100,000	—
	C-3	30'6"	46.6	1,300,000	Idle
	C-5	29'6"	56.2	1,330,000	1990
	C-6	29'6"	56.2	1,240,000	1989*

...On Size, Production and Plans For Relining

Company and Location	Furnace Number /Name	Hearth Diam. (ft/in.)	Working Volume (Mcf)	Yearly Production (Net Tons)	Reline Date
LTV Steel (cont.)					
Indiana Harbor, Ind.	H-1	27'6"	–	–	–
	H-3	29'6"	56.1	1,460,000	1988
	H-4	32'10"	70.1	1,730,000	1987
* Blown in from bosh and gun stack reline 2/87					
McLouth Steel					
Trenton, Mich.	1	28'6"	56.7	1,000,000	–
National Steel					
Granite City, Ill.	A	27'3"	50.7	876,000	–
	B	27'3"	50.7	949,000	–
Ecorse, Mich.	A	30'6"	62.4	1,500,000	–
	B	29'0"	58.5	1,200,000	–
	D	28'0"	53.3	1,200,000	–
Rouge Steel					
Dearborn, Mich.	A	20'0"	28.1	660,000	–
	B	20'0"	28.1	660,000	–
	C	29'0"	55.0	1,200,000	–
Sharon Steel					
Farrell, Pa.	3	23'1"	32.3	700,000	–
Shenango, Inc.					
Neville Island, Pa.	B	22'9"	29.3	450,000	–
Stelco					
Hamilton, Ont.	C	25'0"	37.7	800,000	Idle
	D	29'0"	52.9	1,000,000	–
	E	32'0"	72.5	1,600,000	–
Lake Erie, Ont	1	34'0"	76.1	1,400,000	1988
Sydney Steel					
Sydney, Nova Scotia	3	21'6"	23.9	550,000	–
USS					
Fairfield, Ala.	8	32'0"	77.5	1,825,000	–
Fairless Hills, Pa.	2	30'10"	58.8	1,000,000	–
	3	30'10"	58.8	1,000,000	–
Gary, Ind.	4	28'0"	53.9	1,058,500	–
	6	28'0"	53.1	1,058,500	–
	7	28'0"	44.4	1,058,500	–
	8	26'6"	45.6	949,000	–
	13	36'6"	101.7	2,737,000	–
Lorain, Ohio	1	23'0"	29.0	525,000	–
	4	29'0"	50.8	1,150,000	–
Weirton Steel					
Weirton, W.Va.	1	27'0"	54.0	1,000,000	1989
	2	27'0"	44.0	800,000	1990
	3	27'0"	46.7	800,000	1988
	4	27'0"	46.7	–	1988
Wheeling-Pittsburgh					
Steubenville, Ohio	1	24'9"	37.2	600,000	1991
	2	23'2"	35.4	–	1995
Mingo Junction, Pa.	3	24'1"	33.7	700,000	1993
	5	23'4"	40.5	700,000	1995

Source: Iron Age and Industry reports

said Mr. Duncan. That compared with 5.78 tons in 1982. The coke rate has dropped and the silicon content of the hot metal has decreased.

"We have a very stable operation," said Mr. Duncan. "We have a high percent availability. We run on 40 pct sinter. We feel we have good burden distribution."

Lining wear is checked regularly. "We have core-drilled parts of the bosh and a couple of areas in the stack," said Mr. Duncan. "In the mantle and the stack, our lining thickness is still at the ends of the cooling plates. In the top of the bosh, we have lost anywhere from four to eight in. We have been told that's a pretty normal wear rate."

These findings are in line with Armco's campaign target. "We do not anticipate a major reline until 1992," said Mr. Duncan. "That would be eight years. We hope as we continue to improve maintenance technology – gunning and grouting – it would be beyond that."

Cooling leaks haven't caused major problems. "We've lost a total of about five cooling plates since we started the furnace in October 1984," said Mr. Duncan. "When we detect leaks, we take that plate out and put a new plate in."

He isn't counting on the intense cooling action of the Hoogovens system to prevent oxidation of graphite. "It is our opinion that you can reach temperatures that support the dissociation of water and oxidation. We take precautions. When we detect a leaking plate, water will be taken off that plate immediately."

He feels the new lining system is performing as expected. "We're satisfied with it at this point."

Wheeling-Pittsburgh No. 5

Wheeling-Pittsburgh Steel Corp. began relining its No. 5 blast furnace at Mingo Junction, Ohio, on Aug. 15, 1987. On Dec. 4, 114 days later, the job was completed.

"This was a full reline," said R. C. Stoll, superintendent of blast furnaces at Wheeling-Pittsburgh's Steubenville plant. "In a full reline, you take out your hearth and replace it. A partial reline is limited to the bosh and stack."

The $33 million project also included the installation of Bailey Hoogovens refractories in two of the three stoves. Fifty-three ft of furnace shell plate were replaced, and the cooling of refractories was improved through the installation of added cooling plates.

Refractories for the stoves and hot blast mains were supplied by National Refractories. "They ranged from a high-fired superduty to special andalusite-based 60 pct alumina refractory," said L.J. Scheibal, product manager, clay/aluminum refractories, National.

Bailey Hoogovens was the design engineer for the whole project. A Hoogovens hearth was installed, but its graphitic system wasn't used in the bosh or stack.

The stove changes and associated improvements made it possible to raise hot blast temperatures 400°F. "With the higher temperatures, you drive the furnace more," said Mr. Stoll. "We increased the charging capacity of the furnace. If we had not done that, the furnace would have run away from us."

The No. 3 furnace has a hearth diam of 25.6 ft and 16 tuyeres. The furnace is rated for a little over 2,000 tons a day. "We're expecting to accomplish in the area of 2,500 tons a day," said Mr. Stoll. On individual days, No. 3 has actually gone over 2,700 tons.

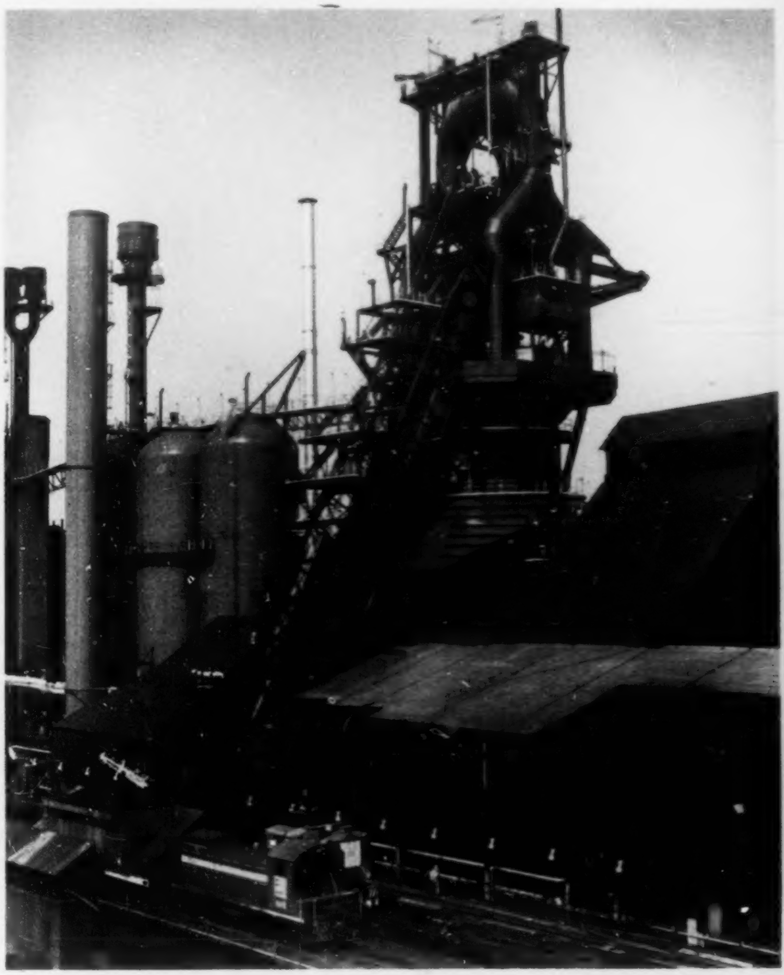
Wheeling-Pittsburgh is in the fortunate position of having an ample coke supply. Like other producers, the company has found that the supply of iron ore pellets has tightened. One supplement to the pellets is being tried.

"We're unloading barges with lump ore from Brazil," said Mr. Stoll in June.

He was confident the rebuilding would yield benefits. "We expect longer campaign life," he said.

Dofasco No. 4

In mid-1986, Dofasco began rebuilding its No. 4 blast furnace. This has a 28 ft hearth and a bell-less top. It's cooling system has included both staves and cooling plates.



LTV Steel's big H-4 furnace at Indiana Harbor was relined and blown in July 1987.

In the rebuilding project, extensive use was made of the graphitic refractories and cooling plates of Hoogovens. Details of the lining were described by R.M. Bean of Dofasco in a paper given at the February 1988, meeting of the Eastern States Blast Furnace and Coke Oven Assn.

"The major part of the furnace refractory is laid dry using machined bricks," said Mr. Bean. "The bosh and lower stack area is constructed of alternating layers of graphite and semi-graphite and semi-graphite, laid dry, with copper cooling plates in each ring.

"Cooling is provided by a dense array of copper cooling plates, each row spaced 12 in. apart, measured vertically. The mid-stack area features the inclusion of silicon carbide at the hot face to increase the wear life of the lining.

"The upper stack features a less dense cooling plate configuration. These plates are spaced 2 to 2½ ft apart vertically.

"The furnace hearth is constructed primarily of graphite and semi-graphite with high alumina and high-fired superduty above the graphite of the hearth bottom. Cooling is provided by external water sprays.

"Our operators are quite happy with the new design," said Mr. Bean in June. "Our figures show that the new design is more efficient in removing heat from the lining."

By George J. McManus

PRICE & PRODUCTION DATA

(Effective July 5, 1988)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	281	273	280	243
Pittsburgh	200	194	204	153
Youngstown	120	93	129	91
Lake Erie	152	139	162	144
Detroit	144	158	160	153
Chicago	446	486	533	489
Midwest	189	176	183	186
Southern	208	206	218	185
Western	94	94	100	51
U.S. Production	1,834	1,819	1,969	1,695

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 37.344*
Pellets (per iron unit natural)	gross-ton 46.84-59.4**
Pellets (per iron unit natural)	gross-ton 72.45-86.9***
Mesabi, regular-unscreened	gross-ton 32.53
Mesabi, non-bessemer	gross-ton 30.03-31.53

*37.344c—U.S. Steel, 5/20/87, FOB Mount Iron, Minn. **46.84c—Inland Steel Mining, 1/1/87; 58.0c—Mineral Services, 8/13/85; 59.4c—Pickands Mather, 8/1/85, delivered hold of vessel, upper Lake ports. ***72.45c—Cleveland-Cliffs, 12/30/86; Oglebay Norton, 3/1/87; 86.9c—Hanna Mining, 2/26/82.

STEEL PRODUCTION, COMPOSITE PRICES

(Effective July 5, 1988)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1988	To Date 1987
Net tons, in thousands	1,834	1,819	50,923	41,800
Capability Utilization Rate	82.2	84.9	90.3	74.3

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 4/3/88)	24.333	24.333	24.333	25.236
Pig Iron** (Net ton=2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 115.17	$ 105.17	$ 102.83	$ 79.50
No. 2 bundles	$ 76.83	$ 70.50	$ 70.50	$ 54.17

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 121.50	$ 106.50	$ 104.50	$ 85.50
No. 1 steel, Philadelphia	104.50	101.50	96.50	73.50
No. 1 steel, Chicago	119.50	107.50	107.50	79.50
No. 1 bundles, Detroit	128.50	108.50	108.50	100.50
Low Phos., Youngstown	130.50	115.50	115.50	89.50
No. 1 mach'y cast., Pgh.	98.50	98.50	98.50	84.50
No. 1 mach'y cast., Phila	111.50	111.50	111.50	93.50
No. 1 mach'y cast., Chi	128.50	128.50	128.50	103.50

*Finished Steel Composite: Weighted index of steel bars, structurals, plates, rails, hot rolled and cold rolled sheets.

**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective July 5, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	109.00	122.00	7/5/88
Copper (C)	107.00	113.00	7/5/88
Lead	36.00	34.00	5/23/88
Magnesium Ingot	153.00	148.00	12/9/85
Nickel (LME)	625.00	657.00	7/5/88
Zinc	66.00	63.00	6/10/88

ALUMINUM: Avg. for last week & previous week. COPPER (C)=cathode. LEAD: common grade. MAGNESIUM: 99.8% pig delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$260.00
Beryllium-copper strip No. 25, per lb Be	$8.00
Beryllium powder SP200F, per lb.	$244.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz.	$437.50
Indium, per troy oz.	$9.95
Iridium, per troy oz.	$325.00
Magnesium sticks, 10,000 lbs.	$2.12
Mercur,, per 76-lb., f.o.b. N.Y.	$348.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz	$125.00
Platinum, per troy oz.	$557.00
Rhodium, per troy oz	$1,220.00
Silver ingots, per troy oz.	$6.77
Titanium sponge, melt grade	$4.00
Tungsten powder, hyd red	$9.53-9.85
Vanadium	$6.00
Zirconium sponge	$11.20-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

June 27—321.00
June 28—318.00
June 29—319.00
June 30—320.00
July 1—320.00

Scrap Prices
Brass Mill Scrap

(Cents per lb.; over 20,000 lbs. add 1¢ per lb.)

	Solids	Turnings
Copper	85	80
Yellow brass	73	72
Red brass	67½	63½
Comm. bronze	69½	64½
Mang. bronze	49½	48½
Free cutting rod ends	64½	63½

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	84
No. 2 copper wire	74
Light copper	68

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	75
No. 2 copper wire	66
Light copper	59
No. 1 composition	58
No. 1 comp. turnings	58
Hvy. yellow brass solids	42
Hvy. yellow brass turnings	36
Radiators	38

Aluminum

New mixed clips	65 — 66
Old sheet	54 — 55
Old cast	56 — 57
Clean dry borings	46 — 47

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	57 — 58
Mixed L.C. clips	56 — 57
Old sheets and cast	47 — 48
Borings and turnings	39 — 40
Duraluminum clippings	48 — 49

Copper and Brass

No. 1 copper wire	70 — 72
No. 2 copper wire	60 — 61
Light copper	54 — 55
Radiators	38 — 39
No. 1 composition	58 — 59
No. 1 composition turnings	54 — 55
Cocks and faucets	48 — 49
Clean heavy yellow brass	44 — 45
Brass pipe	52 — 53
New soft brass clippings	64 — 65

Lead

Heavy soft lead	14 — 15
Whole batteries	2 — 3
Type metal	22 — 23
Electrotype	14 — 15

Nickel

Nickel solid	445 —455
Nickel rod ends	438 —448
Nickel sheets, clips	428 —438
Nickel turnings	254 —274

Zinc

New zinc clippings	19 — 20
Old diecast zinc	15 — 16

EFFECTIVE JULY 5, 1988

(Effective July 5, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 121.00 to	$ 122.00
No. 2 hvy. melting	111.00 to	112.00
No. 1 dealer bundles	151.00 to	152.00
No. 1 factory bundles (auto)	161.00 to	162.00
No. 2 bundles	69.00 to	70.00
No. 1 busheling	151.00 to	152.00
Machine shop turnings	44.00 to	45.00
Shoveling turnings	89.00 to	90.00
Cast iron borings	88.00 to	89.00
Low phos. punchings plate	164.00 to	165.00
Heavy turnings	111.00 to	112.00
No. 1 RR hvy. melting	142.00 to	143.00
Rails, 2 ft. and under	158.00 to	159.00
Scrap rails, random lgth	146.00 to	147.00
RR specialties	151.00 to	152.00
No. 1 machinery cast	98.00 to	99.00
Cupola cast	90.00 to	91.00
Heavy breakable cast	40.00 to	41.00
Stainless		
18-8 bundles and solids	1,290.00 to	1,300.00
18-8 turnings	1,190.00 to	1,200.00

Chicago

No. 1 hvy. melting	$ 119.00 to	$ 120.00
No. 2 hvy. melting	116.00 to	117.00
No. 1 dealer bundles	133.00 to	134.00
No. 1 factory bundles (auto)	131.00 to	132.00
No. 2 dealer bundles	89.00 to	90.00
No. 1 busheling	140.00 to	141.00
Shredder scrap	140.00 to	141.00
Machine shop turnings	51.00 to	52.00
Mixed borings and turnings	43.00 to	44.00
Shoveling turnings	70.00 to	71.00
Cast iron borings	66.00 to	67.00
Low phos. forge crop	162.00 to	163.00
Low phos. punchings plate 1/4 in. and heavier	178.00 to	179.00
Low phos. 2 ft. and under	171.00 to	172.00
No. 1 RR hvy. melting	134.00 to	135.00
Scrap rails random lgth	144.00 to	145.00
Reroller rails	154.00 to	155.00
Rails, 2 ft. and under	174.00 to	175.00
RR couplers and knuckles	133.00 to	134.00
RR car axles	158.00 to	159.00
No. 1 machinery cast	126.00 to	129.00
Cupola cast	108.00 to	109.00
Stove plate	130.00 to	131.00
Steel car wheels	154.00 to	155.00
Stainless		
18-8 bundles and solids	1,250.00 to	1,260.00
18-8 turnings	1,150.00 to	1,160.00
430 bundles and solids	260.00 to	270.00
430 turnings	175.00 to	185.00

Philadelphia

No. 1 hvy. melting	$ 103.00 to	$ 106.00
No. 2 hvy. melting	93.00 to	96.00
No. 1 dealer bundles	135.00 to	138.00
No. 2 dealer bundles	70.00 to	73.00
No. 1 busheling	135.00 to	138.00
Shredder scrap	130.00 to	133.00
Machine shop turnings	32.00 to	35.00
Mixed borings and turnings	32.00 to	35.00
Shoveling turnings	53.00 to	56.00
Low phos. 5 ft. and under	125.00 to	128.00
Low phos. 2 ft. punchings	142.00 to	145.00
Electric furnace bundles	146.00 to	149.00
RR specialties	124.00 to	127.00
Rails, 2 ft. and under	145.00 to	148.00
Cupola cast	102.00 to	105.00
Heavy breakable cast	52.00 to	55.00
No. 1 machinery cast	110.00 to	113.00

Detroit

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 79.00 to	$ 80.00
No. 2 hvy. melting	77.00 to	78.00
No. 1 dealer bundles	128.00 to	129.00
No. 2 bundles	61.00 to	62.00
No. 1 busheling	126.00 to	127.00
Drop forge flashings	74.00 to	75.00
Machine shop turnings	56.00 to	57.00
Mixed borings and turnings	26.00 to	27.00
Shoveling turnings	56.00 to	57.00
Cast iron borings	62.00 to	63.00
Heavy breakable cast	51.00 to	52.00
Mixed cupola cast	68.00 to	69.00
Automobile cast	90.00 to	91.00
Stainless		
18-8 bundles and solids	1,140.00 to	1,150.00
18-8 turnings	740.00 to	750.00
430 bundles and solids	220.00 to	230.00

Youngstown

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 99.00 to	$ 100.00
No. 2 hvy. melting	90.00 to	91.00
No. 1 dealer bundles	128.00 to	129.00
No. 2 dealer bundles	56.00 to	57.00
Machine shop turnings	50.00 to	51.00
Shoveling turnings	50.00 to	51.00
Low phos. plate	130.00 to	131.00
Electric furnace bundles	130.00 to	131.00
Galvanized bundles	128.00 to	129.00

Cleveland

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 95.00 to	$ 96.00
No. 2 hvy. melting	85.00 to	86.00
No. 1 dealer bundles	130.00 to	131.00
No. 1 factory bundles	131.00 to	132.00
No. 2 bundles	55.00 to	56.00
No. 1 busheling	129.00 to	130.00
Machine shop turnings	53.00 to	54.00
Shoveling turnings	53.00 to	54.00
Cast iron borings	53.00 to	54.00
Cut structural & plates 5 ft. and under	113.00 to	114.00
Cut structural & plates 2 ft. and under	140.00 to	141.00
Low phos. punchings plate	146.00 to	147.00
Foundry steel, 2 ft. & under	90.00 to	91.00
No. 1 RR hvy. melting	108.00 to	109.00
Rails, 2 ft. and under	157.00 to	158.00
Rails, 18 in. and under	161.00 to	162.00
No. 1 machinery cast	89.00 to	90.00
Mixed cast	54.00 to	55.00
Stainless		
18-8 bundles	1,145.00 to	1,155.00
18-8 turnings	745.00 to	755.00
430 bundles	225.00 to	235.00

Buffalo

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 96.00 to	$ 97.00
No. 2 hvy. melting	87.00 to	88.00
No. 1 busheling	125.00 to	126.00
No. 1 dealer bundles	125.00 to	126.00
No. 2 bundles	48.00 to	49.00
Machine shop turnings	30.00 to	31.00
Mixed borings and turnings	30.00 to	31.00
Shoveling turnings	36.00 to	37.00
Cast iron borings	38.00 to	39.00
Low phos. plate	126.00 to	127.00
Structural and plate 2 ft. and under	135.00 to	136.00
Rails, 2 ft. and under	138.00 to	139.00
Scrap rails, random lgth	119.00 to	120.00
No. 1 machinery cast	104.00 to	105.00
No. 1 cupola cast	87.00 to	88.00

St. Louis

No. 1 hvy. melting	$ 99.00 to	$ 100.00
No. 2 hvy. melting	76.00 to	77.00
No. 1 busheling	140.00 to	141.00
No. 1 dealer bundles	142.00 to	143.00
No. 2 bundles	79.00 to	80.00
Machine shop turnings	46.00 to	47.00
Shoveling turnings	50.00 to	51.00
Cast iron borings	57.00 to	58.00
No. 1 RR hvy. melting	125.00 to	126.00
Rails, random length	121.00 to	122.00
Rails, 5 ft. and under	133.00 to	134.00
Plate and structural, 5 ft. and under	125.00 to	126.00
Cupola cast	89.00 to	90.00
Heavy breakable cast	43.00 to	44.00
Stove plate	125.00 to	126.00
Steel car wheels	122.00 to	123.00
Rerolling rails	130.00 to	131.00
Unstripped motor blocks	66.00 to	67.00

Birmingham

No. 1 hvy. melting	$ 99.00 to	$ 100.00
No. 2 hvy. melting	95.00 to	96.00
No. 1 dealer bundles	108.00 to	109.00
No. 2 bundles	81.00 to	82.00
No. 1 busheling	108.00 to	109.00
Shredder scrap	126.00 to	127.00
Machine shop turnings	41.00 to	42.00
Shoveling turnings	56.00 to	57.00
Cast iron borings	33.00 to	34.00
Electric furnace bundles	89.00 to	90.00
Elec. furnace, 3 ft. & under	104.00 to	105.00
Structural and plate, 2 ft.	140.00 to	141.00
Structural and plate, 4 ft.	128.00 to	129.00
No. 1 RR hvy. melting	128.00 to	129.00
Scrap rails, random lgth	124.00 to	125.00
Rails, 2 ft. and under	148.00 to	149.00
Angles and splice bars	129.00 to	130.00
No. 1 cupola cast	104.00 to	105.00
Unstripped motor blocks	92.00 to	93.00

Cincinnati

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 97.00 to	$ 98.00
No. 2 hvy. melting	87.00 to	88.00
No. 1 dealer bundles	121.00 to	122.00
No. 2 bundles	61.00 to	62.00
No. 1 busheling	127.00 to	128.00
Machine shop turnings	36.00 to	37.00
Shoveling turnings	45.00 to	46.00
Cast iron borings	48.00 to	49.00
Low phos. 18 in. and under	143.00 to	144.00
Rails, random length	110.00 to	111.00
Rails, 2 ft. and under	143.00 to	144.00
No. 1 cupola cast	92.00 to	93.00
Heavy breakable cast	54.00 to	55.00
Drop broken cast	98.00 to	99.00

New York

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 72.00 to	$ 74.00
No. 2 hvy. melting	64.00 to	65.00
No. 2 dealer bundles	35.00 to	37.00
Mixed borings and turnings	10.00 to	11.00
Shoveling turnings	10.00 to	12.00
Clean cast, chem. borings	38.00 to	39.00
No. 1 machinery cast	81.00 to	82.00
Mixed yard cast	54.00 to	55.00
Heavy breakable cast	18.00 to	20.00
Stainless		
18-8 prepared solids	940.00 to	960.00
18-8 turnings	600.00 to	620.00
430 prepared solids	280.00 to	300.00
430 solids	285.00 to	295.00

Boston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 73.00 to	$ 75.00
No. 2 hvy. melting	63.00 to	65.00
No. 1 dealer bundles	93.00 to	95.00
No. 2 bundles	33.00 to	35.00
No. 1 busheling	88.00 to	90.00
Shredder scrap	83.00 to	85.00
Machine shop turnings	20.00 to	22.00
Shoveling turnings	25.00 to	27.00
No. 1 machinery cast	85.00 to	87.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	22.00 to	24.00

San Francisco

No. 1 hvy. melting	$ 65.00 to	$ 67.00
No. 2 hvy. melting	59.00 to	61.00
No. 1 dealer bundles	57.00 to	59.00
No. 2 dealer bundles	45.00 to	46.00
Machine shop turnings	17.00 to	18.00
Cast iron borings	17.00 to	18.00
No. 1 cupola cast	89.00 to	91.00

Los Angeles

No. 1 hvy. melting	$ 73.00 to	$ 75.00
No. 2 hvy. melting	67.00 to	69.00
No. 1 dealer bundles	65.00 to	67.00
No. 2 dealer bundles	47.00 to	49.00
Machine shop turnings	17.00 to	18.00
Shoveling turnings	18.00 to	19.00
Cast iron borings	18.00 to	19.00
Elec. furnace, 1 ft. and under (foundry)	80.00 to	82.00
No. 1 cupola cast	84.00 to	86.00

Seattle

No. 1 hvy. melting	$ 94.00 to	$ 95.00
No. 2 hvy. melting	84.00 to	85.00
No. 2 bundles	69.00 to	70.00
No. 1 cupola cast	104.00 to	105.00
Mixed yard cast	85.00 to	87.00

Hamilton, Ont.

Brokers buying prices per net ton on cars

No. 1 hvy. melting	$ 100.00
No. 2 hvy. melting, cut 2 ft. and under	87.00
No. 1 dealer bundles	131.00
No. 2 bundles	81.00
Mixed steel scrap	73.00
Bush. new fact. prep'd	128.00
Bush. new fact. unprep'd	104.00
Machine shop turnings	39.00
Short steel turnings	39.00
Mixed borings and turning	26.00
Cast scrap	97.00

Houston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 110.00 to	$ 111.00
No. 2 hvy. melting	101.00 to	102.00
No. 2 bundles	52.00 to	53.00
Machine shop turnings	45.00 to	46.00
Crushed turnings	55.00 to	56.00
Shredder scrap	114.00 to	115.00
Cut structural plate, 2 ft. and under	126.00 to	127.00
Cut structural plate, 5 ft. and under	117.00 to	118.00
Unstripped motor blocks	60.00 to	61.00
Cupola cast	95.00 to	96.00

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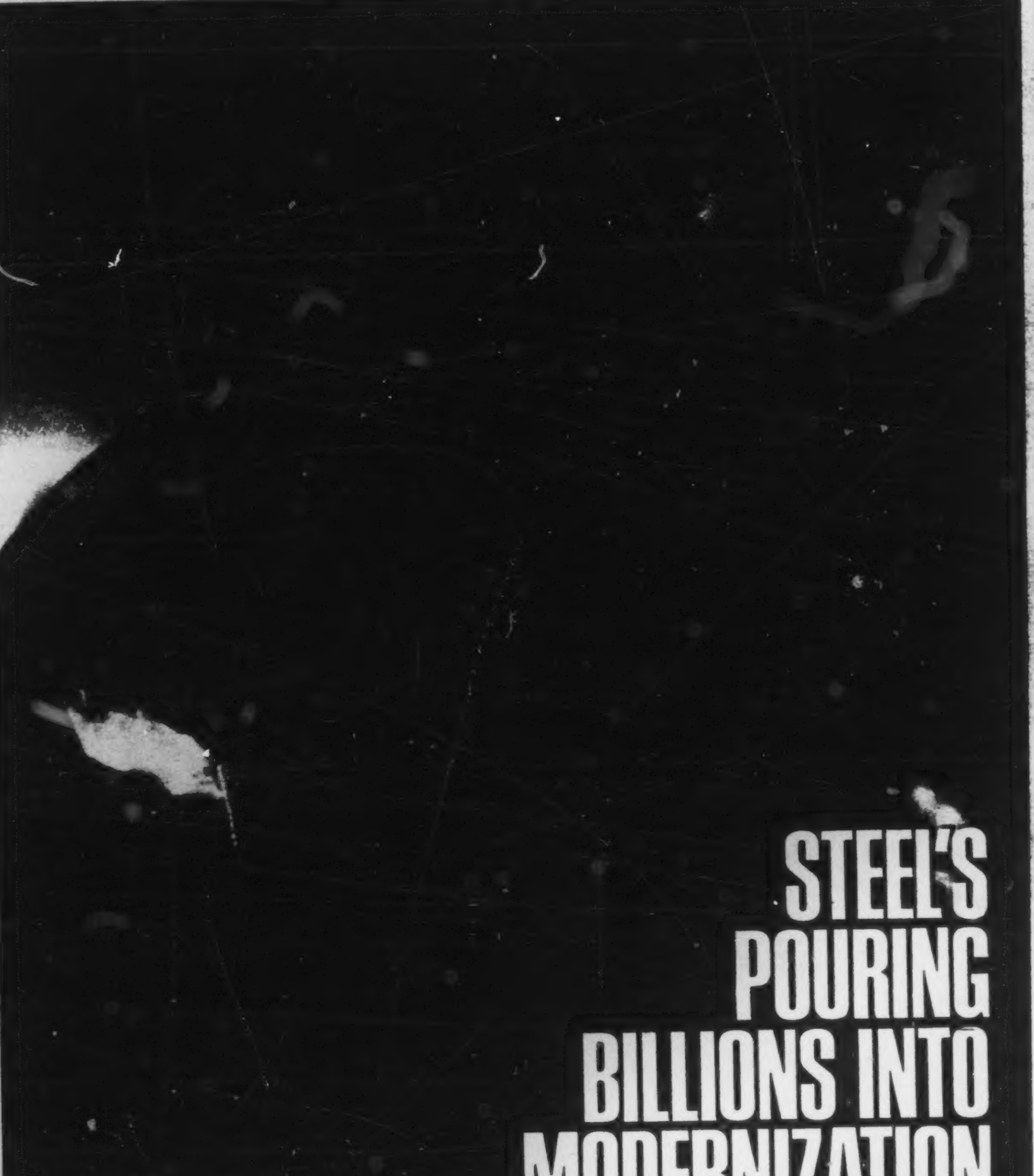
IRON AGE

THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

A Fairchild Business Publication

SEPTEMBER 1988



STEEL'S POURING BILLIONS INTO MODERNIZATION

...PLUS A PREVIEW OF THE AISE CONFERENCE

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IRON AGE

SEPTEMBER 1988

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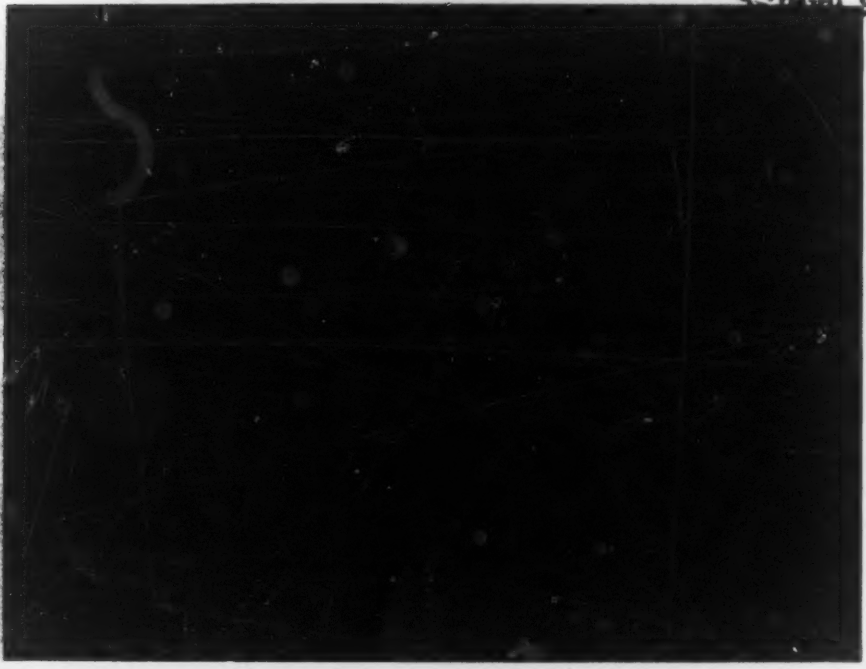

A ladle of molten iron is charged into the BOF at Bethlehem Steel's Burns Harbor plant.

Steel's Pouring Billions Into Modernization

Spending on capital projects has risen to a $6 billion annual rate. Quality and efficiency are key interests, but steelmakers are also spending to maintain production. p. 21

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INDIRECT STEEL IMPORTS ARE DOWN, BUT NOT OUT

The declining dollar has helped to boost exports and increase the competitiveness of U.S. steel producers, but foreign made goods are still flowing into the U.S.

Three years ago, the skyrocketing value of the dollar in world currency markets brought to light a previously unknown problem for the U.S. steel industry.

Indirect steel imports, in the form of manufactured goods containing steel, rose dangerously and threatened to erode the steel and metal manufacturing base in this country.

Now, despite the continued growth of both direct and indirect steel imports in the U.S., the rapid widening of the indirect steel trade deficit is slowing down.

"We've blunted the acceleration of the indirect steel trade deficit," said Bob Wendt, manager of economic studies at Bethlehem Steel Corp.

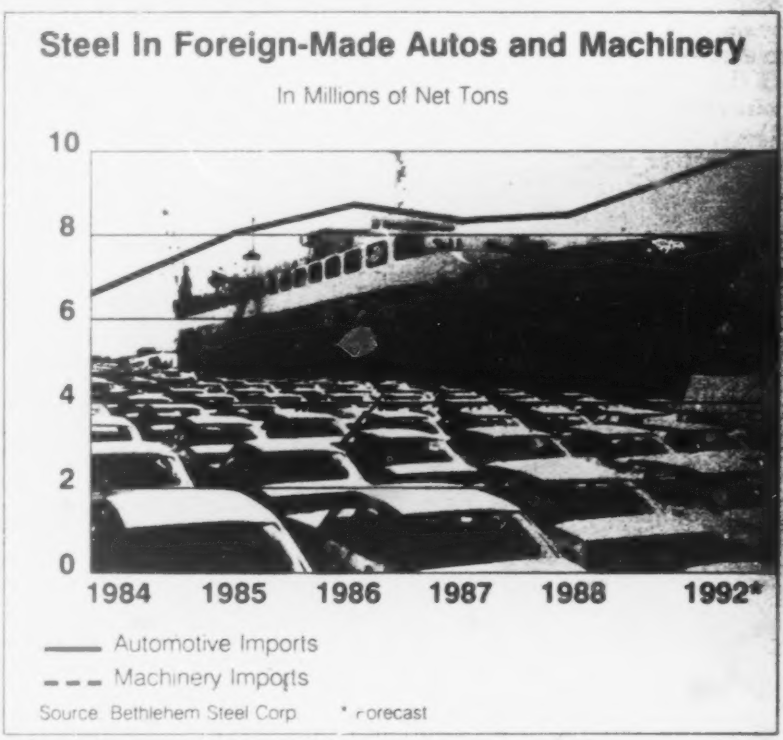
While the problem of indirect steel imports will never go away, there is evidence of a downturn in the trend. "The good news is that there will not be too much growth in the next few years," Mr. Wendt said.

Indirect steel imports, defined as steel entering a country in the form of manufactured goods, nearly doubled in the U.S. between 1984 and 1986, rising to 17.5 million tons in the form of imported automobiles, machinery and other steel consuming products.

The net trade deficit for indirect steel trade in 1986 totaled a 9.3 million tons, compared with 7.4 million tons in 1985 and 5.0 million tons in 1984, according to figures provided by the American Iron and Steel Institute (AISI).

Yet, despite the growing numbers, a new-found strength in U.S. steel-containing goods, an indirect result of the lower value of the dollar, has helped to boost exports, increased the competitiveness of U.S. manufacturers and stabilized the indirect trade deficit, Mr. Wendt said.

Steel In Foreign-Made Autos and Machinery



Source: Bethlehem Steel Corp. * Forecast

The 1987 indirect steel trade figures, which are not yet available, should show exports increasing to 8.3 million tons from 8.2 million tons in 1986, and indirect imports decreasing to 17.1 million tons, Mr. Wendt estimated. Likewise, the indirect steel trade deficit should improve, narrowing to 8.8 million tons, he said.

Mr. Wendt said that 1988 will demonstrate even more improvement. In a study done in early June, he estimated that exports will reach 9.0 million tons, indirect imports will drop to 17.0 million tons and the net deficit will fall to 8.0 million tons. But with trade statistics in for almost two thirds of the year, he said that results for 1987 are now expected to better even those figures.

The domestic steel industry's recognition of the problem of indirect steel imports can be traced back to 1984, when the U.S. trade balance for machinery and transportation equipment shifted from a surplus to a deficit, according to a U.S. Commerce Department official.

With the high dollar attracting interest in offshore manufacturing and less expensive imported goods, steel imports, both direct and indirect, soared.

Indirect steel trade was not a major issue for many years, because it did not have a great effect on total steel demand, according to Mr. Wendt. The U.S. traditionally exported large amounts of heavy machinery, which balanced increasing volumes of imported au-

Indirect Steel Trade in 1986

	Value in Billions of Dollars			Volume in Millions of Net Tons		
	Imports	**Exports**	**Net Trade**	**Imports**	**Exports**	**Net Trade**
Automotive	$70.0	$19.0	($51.0)	8.7	2.9	(5.8)
Machinery	24.0	20.0	(4.0)	5.3	3.8	(1.5)
Other Durables	6.0	1.0	(5.0)	0.6	0.2	(0.4)
Construction	4.0	3.0	(1.0)	1.1	0.7	(0.4)
Appliances	3.0	1.0	(2.0)	0.6	0.1	(0.5)
Other	9.0	20.0	(11.0)	1.2	0.5	(0.7)
Total	$116.0	64.0	(52.0)	17.5	8.2	(9.3)

Source: Bethlehem Steel Corp.

tomobile products. This balance lasted through much of the 1970s.

The new dimension of the "indirect" trade deficit was discovered after industry analysts realized that the conventional measurements of the steel market were inadequate for gauging actual steel demand.

Keeping track of it helps to explain why the U.S. industry failed to participate in the economic recovery from 1983 to 1986 and why steel shipments today are below levels they should be, considering the strength of the overall U.S. economy, Mr. Wendt said.

However, current tightness in the steel market is evidence that exports are increasing and the deficit should be decreasing, said a Commerce spokesman.

In addition, steel-intensive industries such as the machine tool industry have begun to replace imports with production of their own, indicating the beginning of a new competitive trend, the Commerce official said.

The greatest impact of the low dollar, which dropped in value after 1986, has been the boosting of the competitiveness of U.S. manufacturers of technically sophisticated products, especially where the competition is the European Community (EC) or Japan, according to Mr. Wendt.

"There is a new class of manufacturers in the U.S. who are seeing the benefit of the lower dollar against the currencies of the EC nations and Japan," he said. The dollar's lower value against the high value of such countries as West Germany and Japan has particularly aided U.S. exports of construction and other heavy machinery.

Shift in Production

Much of the production of steel-containing goods is shifting away in general from Japan, Canada and Europe, and moving to countries whose currencies are more closely linked to the dollar, such as Korea, Taiwan, Mexico and Brazil. Thus, these countries also benefit from the low dollar, which forces production away from the United States' major steel-producing competitors.

Mr. Wendt warned that despite the current advantage the U.S. enjoys over Japanese and European steel exports, these other, newer sources of production, will keep pressure on the U.S. by providing import competition.

"While the state of the battle with the EC and Japan looks like we will be able to hold our own, and even trim the indirect deficit—other competitors in the developing world continue to broaden their steel-using manufacturing base, a development that will keep pressure on the U.S. for the foreseeable future," Mr. Wendt said at a conference in June on steel industry strategies.

Mr. Wendt also said the loss of traditional export customers such as Latin America and the Middle East is a major concern for the U.S. industry as it expands its steel-containing products exports. Explaining that those areas used to be the backbone of the U.S. export market in the 1970s, he said that economic reforms in both regions will have to be affected before those markets can be re-established.

A forecast for the long-term economic picture, Mr. Wendt suggested, is one of the shifting of steel-containing goods from the EC, Japan and Canada towards developing countries. U.S. exports should continue to rise, but not substantially in the next five years, because of the economic conditions of traditional export markets, and the increasing production capabilities of those countries which will keep alive competition for the U.S.

While the problem of indirect steel imports has improved, and is in fact much better than two years ago, a balance between imports and exports is not expected in the near future, Mr. Wendt said. However, major trade deficit growth in the next few years will be held to a steady rate, he predicted.

"Total imports will probably increase over the next five years, but nowhere near the pace of the last five," he said.

By Elizabeth Chute
Fairchild News Service

2ND QUARTER EARNINGS
FIRM PRICES; WIDER MARGINS

Domestic steelmakers shipped close to 22 million tons in the quarter and enjoyed firm prices, while nonferrous producers toted up higher gains in both revenues and profits.

Steel earnings ranged from good to spectacular in the second quarter of 1988.

In the spectacular class was the 13.3 pct return on sales of Inland Steel Industries, Inc. Inland's operating profit came to an equally impressive $79 a ton.

In the specialty field, Allegheny Ludlum Corp. earned over 8 pct on sales. Among the mini-mills, the 19.1 pct profit margin of New Jersey Steel Corp. stood out.

The early returns showed only three out of 14 mills earning less than 5 pct on sales in the second quarter. Shipping close to 22 million tons in the quarter, steel companies enjoyed firm prices and the benefits of their long cost-cutting period.

There is every indication business will be just about as good in the second half. The new prices on contracts with auto companies will take effect. There may be a slight seasonal dip in shipments, but nothing like the sharp decline that had been expected. Inland Steel is now predicting that the domestic industry's shipments will total 80 million tons this year. The USX estimate is up to 81 million or 82 million tons.

The USX net profit of $213 million came to 5 pct of sales. This was respectable enough, but it would have been a lot better if operating earnings of the oil sector had not declined more than $100 million. The operating profit on steel was $223 million. That came to nearly $70 a ton.

David M. Roderick, USX chairman, was asked if he had any regrets about diversifying into the energy business. "Oil carried us from 1982 through 1987," he said. "This is the first time our earnings from steel will be greater than from energy."

Despite the steel revival, USX hasn't closed the door on divesting at least part of its USS division. "We have been asked if we would consider selling up to 20 pct of USS," said Mr. Roderick. "We would consider that providing we received full value."

Like USX, Armco, Inc., was hurt by diversification. Armco's operating profits on both carbon and specialty steels were up from the second quarter of 1987, but the gains were partly offset by a pre-tax charge of $15 million on financial services.

BIG STEEL'S SECOND QUARTER OPERATING PROFITS

	1988			1987		
	Operating Profit in Millions of $	Shipments in Millions of Tons	Operating Income Per Ton in $	Operating Profit in Millions of $	Shipments in Millions of Tons	Operating Income Per Ton in $
USX	$223.0	3.2	[illegible]	[illegible]	2.2	[illegible]
BETHLEHEM	166.0	2.6	63.85	47.6	2.2	20.40
LTV	164.5	2.5	65.80	[illegible]	2.5	34.20
INLAND	103.5	1.3	79.66	19.4	1.1	[illegible]
ARMCO	50.1	1.1	45.54	27.4	1.1	24.16
NATIONAL	26.9	1.3	20.65	28.9	1.2	24.08

National Steel Corp. reported a modest rise in earnings. With its deep involvement in automotive, National figures to benefit from the prices applied to auto sheet in the new model year. The continued strength of the auto market is another plus factor.

"Overall demand... looks strong in the second half of the year," said Howard M. Love, National's chairman. "Automotive companies recently increased their schedules and auto, truck, and van inventories appear to be low."

Wheeling-Pittsburgh Steel Corp. had a net profit of more than $62 million in the second quarter. That came to 21.3 pct of sales. Wheeling-Pittsburgh noted that its bankrupt condition reduced both interest and pension costs.

Nevertheless, Wheeling-Pittsburgh's performance has apparently impressed investors. The company's stock has moved up sharply in the last few months. Officials said they had no knowledge of any takeover activity.

Weirton Steel Corp.'s operating income rose from $41 million in the second quarter of 1987 to $50 million in the second quarter of 1988. However, an increase of profit sharing to 50 pct of after-tax income reduced the amount available to the company. Execution of Weirton's $500 million capital plan hinges on modifying the profit-sharing and stock-purchase agreements.

The strong showing of New Jersey Steel was attributed partly to savings from an electric furnace equipped for eccentric bottom tapping.

"We have achieved the cost reductions of about $15 per ton we had anticipated from the new equipment and we are operating at approximately the half-million ton-per-year level of steelmaking

(Sales and earnings table appears on p. 58; story continues on p. 61.)

STEEL: PRICE STRENGTH FIRMS UP THE BOTTOM LINE

SECOND QUARTER PROFIT REPORT – 1988 (In Millions of Dollars)

	EARNINGS				SALES		
	E/S	2nd Q 1988	2nd Q 1987	Pct Change	2nd Q 1988	2nd Q 1987	Pct Change
USX	5.0	$213.0	$165.0	+29.1	$4,269.0	$3,954.0	+8.0
LTV	7.6	157.6	122.7	+28.4	2,063.8	1,933.9	+6.7
BETHLEHEM	11.0	150.5	46.8	+221.6	1,369.0	1,128.0	+21.4
ARMCO	4.9	40.4	36.2	+11.6	826.7	719.5	+14.9
NATIONAL	3.0	19.6	18.4	+6.5	659.3	615.7	+7.1
INLAND	13.3	86.7	4.7	+1,745.0	650.5	525.2	+23.9
TOTAL	6.8	667.8	393.8	+69.6	9,838.3	8,876.3	+10.8
TIMKEN	4.5	17.7	6.6	+168.2	390.5	302.7	+29.0
WEIRTON	6.3	21.8	23.8	-8.4	348.7	322.0	+8.3
ALLEG. LUD.	8.3	26.3	14.6	+80.1	318.2	217.4	+46.4
WHEEL-PGH	21.3	62.1	39.3	+58.0	291.9	258.8	+12.8
NUCOR	6.9	18.9	13.9	+36.0	272.9	209.5	+30.3
CYCLOPS	3.2	8.1	–	–	253.2	–	–
CO-STEEL	7.4	18.0	10.6	+69.8	244.0	204.3	+19.4
CARPENTER	6.5	10.9	2.2	+395.5	166.8	127.2	+31.1
LUKENS	5.6	8.6	6.1	+41.0	153.0	127.6	+19.9
ACME	5.5	5.8	4.7	+23.4	106.3	85.3	+24.6
BIRMINGHAM	8.8	8.5	4.1	+107.3	96.2	72.3	+33.1
CF&I	5.3	4.3	(1.5)	–	80.9	59.8	+35.3
CSC	7.8	6.0	3.1	+93.6	77.1	56.0	+37.7
LACLEDE	5.4	4.1	1.2	+241.7	75.8	67.2	+12.8
NS GROUP	10.5	7.1	1.4	+408.1	67.3	45.6	+47.6
EASTMET	6.0	2.8	0.7	+300.0	46.5	30.1	+54.5
NEW JERSEY*	19.1	7.9	4.4	+79.6	41.2	31.5	+30.8

( ) Indicates a loss *Quarter ended May 31

NONFERROUS: CLIMBING HIGHER AND HIGHER

SECOND QUARTER PROFIT REPORT – 1988 (In Millions of Dollars)

	EARNINGS				SALES		
	E/S	2nd Q 1988	2nd Q 1987	Pct Change	2nd Q 1988	2nd Q 1987	Pct Change
ALCAN	11.0	$243.0	$104.0	+133.7	$2,218.0	$1.716.0	+29.3
ALCOA	9.4	237.6	(91.2)	–	2,519.3	2,013.0	+25.2
AMAX	23.1	237.9	35.5	+570.0	1,030.8	834.3	+23.6
ASARCO	9.6	42.3	2.9	+1,359.0	442.7	329.6	+34.3
BATTLE MOUNT.	44.5	16.1	9.3	+73.1	36.2	26.9	+34.6
BRUSH–WELLMAN	9.2	8.2	6.8	+20.6	89.5	75.7	+18.3
COMINCO	11.5	48.3	38.5	+25.5	419.0	362.0	+15.7
CYPRUS MINERALS	13.2	42.9	7.0	+513.0	324.2	179.2	+80.9
FALCONBRIDGE*	18.5	95.0	(17.0)	–	514.0	319.0	+61.1
INCO	22.9	190.2	13.8	+1,278.0	830.8	422.1	+96.8
KAISERTECH	9.4	51.6	(389.1)	–	550.3	534.1	+3.0
MAGMA COPPER	8.6	11.7	7.5	+56.0	136.2	97.8	+39.3
NEWMONT	17.2	19.4	290.7	–	113.0	89.2	+26.7
OLIN	5.0	29.0	22.0	+31.8	578.0	486.0	+18.9
PHELPS DODGE	16.8	92.8	15.6	+494.9	553.3	355.3	+55.7
PINE POINT	40.1	15.2	6.4	+137.5	37.9	24.5	+54.7
REYNOLDS	9.1	134.8	51.1	+163.8	1,476.2	1,070.9	+37.9
RIO ALGOM*	6.6	33.7	22.0	+53.2	511.0	395.1	+29.3

( ) Indicates a loss * Canadian funds

capacity," said Robert J. Pasquarelli, president of New Jersey Steel.

Citing brisk construction activity and a tight supply of rebars, Mr. Pasquarelli predicted full production for the rest of the year.

The plate business of Lukens, Inc., is benefitting from the strength of heavy industrial construction.

"The chemical, construction equipment, pulp and paper, bridge fabrication, and defense markets are all good," said W.R. Wilson, chairman of Lukens. The company's earnings were up 40 pct from the second quarter of 1987.

Nonferrous

If there's a dull spot in the nonferrous metals market, the luster of the second quarter's results must be outshining it.

Across the board, industry members in aluminum, copper, nickel and other metals posted double-digit gains in sales and sharply higher results in earnings for the second quarter.

Increased demand, and the industry's willingness to fulfill it, offers a partial explanation. Firmer prices, particularly in the lower end of product range, have provided considerable help.

In aluminum, as an example, it's usually assumed that fabricated aluminum products serves up the butter and the primary market provides the bread. But the continuing strength of the ingot market this year seems to be showing that semifinished products can fatten the bottom line as strongly as the higher-priced spreads.

Alcan Aluminium, Ltd., which relies more heavily on the primary market than its competitors, reported that its second quarter net income soared to a record $243 million. That figure was up 39 pct from the record tally in the first quarter of this year and more than double the $104 million reported for the second quarter of 1987.

"Led by continuing strength in the primary market," the big Canadian aluminum producer noted in a statement, "average realizations on the sales of both primary and fabricated products showed further improvement over the preceding quarter and were substantially higher than in the same period of 1987."

Alcan's shipments of ingot products rose nearly 13 pct compared to the second quarter of 1987—213,000 tons versus 189,000 tons. Fabricated products were up a marginal 3 pct—382,000 tons compared 372,000 tons—in the same period.

Alcan wasn't alone in reaching new heights from the lower end of the aluminum market. Kaisertech, Ltd., also reversed its year-earlier results and posted profits of $51.6 million. In the second quarter of 1987, the company recorded a $389.1 million loss, much of it attributed to costs for restructuring Kaiser Aluminum & Chemical Corp., its operating subsidiary.

Nickel prices showed more stability in the second quarter, Inco noted, but demand for the metal remains strong.

The West Coast-based aluminum producer nearly doubled its shipments of ingot—from 33,763 tons in the second quarter of 1987 to 64,022 tons in the same period of this year.

Elsewhere, Reynolds Metals Co. posted record sales and profits in the second quarter. Net income for the Richmond, Va.-based aluminum producer rose to $134.8 million, a 164 pct gain over the $51.1 million in profits reported for the same period of last year. Revenues totaled almost $1.5 billion, up 38 pct from the $1.1 billion total for the second quarter of 1987.

William O. Bourke, Reynolds chairman and CEO, pointed to unprecedented worldwide demand for aluminum, strong price improvement for most aluminum products, higher revenues from the company's gold mining operations, and continued growth in Reynolds' packaging, can and consumer products businesses as explanations for the company's sharp gain in profits.

"The fundamentals in our business are very strong," he added, and predicted that the high rate of activity in the aluminum business would continue through the second half of this year and into 1989.

The Aluminum Co. of America (Alcoa) also reported sharply higher earnings for the second quarter—up to $237.6 million compared to a loss of $91.2 million in the same period of 1987. The big aluminum producer cited higher prices for a variety of products and increased shipments during the period as the reasons for the gains.

Sales totaled more than $2.5 billion during the period, a gain of 25 pct compared to the slightly more than $2.0 billion total for the second quarter of last year.

The copper producers continued their dramatic rebound in the second quarter, helped in large part by the strength of the red metal's price. Phelps Dodge Corp., the nation's largest copper producer, posted a 56 pct gain in sales over the total from the same period of the previous year—$553.3 million compared to $355.3 million. Earnings were up almost 500 pct from $15.6 million for the second quarter of 1987 to $92.8 million.

Asarco, Inc., posted a spectacular 15-fold gain in earnings—to $42.3 million from $2.9 million in the second quarter of 1987.

Meanwhile, Inco, Ltd., reported record second quarter earnings of $190.2 million compared to $13.8 million in the same period of 1987. The company attributed the gain to higher nickel prices. Shipments declined slightly from the level reached in the first quarter when customers bought in anticipation of higher prices and possible supply interruptions.

Nickel prices showed more stability in the second quarter, the company noted, but demand remains strong.

By George J. McManus
and Michael Marley

MATERIALS PRICES

PRICE & PRODUCTION DATA

(Effective August 1, 1988)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	271	272	281	253
Pittsburgh	197	193	200	186
Youngstown	123	122	120	105
Lake Erie	169	153	152	130
Detroit	157	143	144	121
Chicago	531	528	446	435
Midwest	195	179	189	197
Southern	224	219	208	190
Western	98	96	94	52
U.S. Production	1,965	1,905	1,834	1,669

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 37.344*
Pellets (per iron unit natural)	gross-ton 46.84-59.4**
Pellets (per iron unit natural)	gross-ton 72.45-86.9***
Mesabi, regular-unscreened	gross-ton 32.53
Mesabi, non-bessemer	gross-ton 30.03-31.53

*37.344¢—U.S. Steel, 5/20/87, FOB Mount Iron, Minn. **46.84¢—Inland Steel Mining, 1/1/87; 58.0¢—Mineral Services, 8/13/85; 59.4¢—Pickands Mather, 8/1/85, delivered hold of vessel, upper Lake ports. ***72.45¢—Cleveland-Cliffs, 12/30/86; Ogleboy Norton, 3/1/87; 86.9¢—Hanna Mining, 2/26/82.

STEEL PRODUCTION, COMPOSITE PRICES

(Effective August 1, 1988)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1988	To Date 1987
Net tons, in thousands	1,965	1,905	58,547	48,626
Capability Utilization Rate	92.1	89.3	90.2	75.0

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 7/1/88)	24.378	24.378	24.378	24.804
Pig Iron** (Net ton=2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$116.50	$116.50	$115.17	$ 82.83
No. 2 bundles	$ 80.50	$ 76.83	$ 76.83	$ 53.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$121.50	$121.50	$121.50	$ 89.50
No. 1 steel, Philadelphia	108.50	108.50	104.50	74.50
No. 1 steel, Chicago	119.50	119.50	119.50	84.50
No. 1 bundles, Detroit	142.50	132.50	128.50	95.50
Low Phos., Youngstown	132.50	130.50	130.50	92.50
No. 1 mach'y cast., Pgh	98.50	98.50	98.50	87.50
No. 1 mach'y cast., Phila.	115.50	115.50	111.50	93.50
No. 1 mach'y cast., Chi	134.50	128.50	128.50	103.50

*Finished Steel Composite: Weighted index of steel bars, structurals, plates, rails, hot rolled and cold rolled sheets.

**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective August 1, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	108.00	113.00	8/1/88
Copper (C)	99.00	106.00	7/28/88
Lead	36.00	34.00	5/23/88
Magnesium Ingot	153.00	148.00	12/9/85
Nickel (LME)	620.00	640.00	8/1/88
Zinc	66.00	63.00	6/10/88

ALUMINUM: Avg. for last week & previous week. COPPER (C)=cathode. LEAD: common grade. MAGNESIUM: 99.8% pig delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be per lb. contained Be	$260.00
Beryllium-copper strip No. 25, per lb Be	$8.00
Beryllium powder SP200F, per lb	$244.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz	$434.60
Indium, per troy oz	$10.10
Iridium, per troy oz	$305.00
Magnesium sticks, 10,000 lbs	$2.12
Mercury, per 76 lb., f.o.b. N.Y.	$348.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz	$125.00
Platinum, per troy oz	$527.00
Rhodium, per troy oz	$1,200.00
Silver ingots, per troy oz	$6.81
Titanium sponge, melt grade	$4.00
Tungsten powder, hyd red.	$9.53-9.85
Vanadium	$6.00
Zirconium sponge	$11.20-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

July 25—Holiday
July 26—327.00
July 27—326.00
July 28—328.00
July 29—328.00

Scrap Prices
Brass Mill Scrap

(Cents per lb., over 20,000 lbs. add 1¢ per lb.)

	Solids	Turnings
Copper	84	80
Yellow brass	73	72
Red brass	67½	63½
Comm. bronze	69½	64½
Mang. bronze	49½	48½
Free cutting rod ends	64½	63½

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	84
No. 2 copper wire	72
Light copper	67

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	75
No. 2 copper wire	66
Light copper	59
No. 1 composition	58
No. 1 comp. turnings	58
Hvy. yellow brass solids	42
Hvy. yellow brass turnings	36
Radiators	37

Aluminum

New mixed clips	65	— 66
Old sheet	54	— 55
Old cast	56	— 57
Clean dry borings	45	— 46

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	57	— 58
Mixed L.C. clips	56	— 57
Old sheets and cast	47	— 48
Borings and turnings	39	— 40
Duraluminum clippings	48	— 49

Copper and Brass

No. 1 copper wire	70	— 72
No. 2 copper wire	60	— 61
Light copper	54	— 55
Radiators	38	— 39
No. 1 composition	58	— 59
No. 1 composition turnings	54	— 55
Cocks and faucets	48	— 49
Clean heavy yellow brass	43	— 44
Brass pipe	52	— 53
New soft brass clippings	64	— 65

Lead

Heavy soft lead	14	— 15
Whole batteries	2	— 3
Type metal	22	— 23
Electrotype	14	— 15

Nickel

Nickel solids	450	—460
Nickel rod ends	443	—453
Nickel sheets, clips	433	—443
Nickel turnings	259	—279

Zinc

New zinc clippings	19	— 20
Old diecast zinc	15	— 16

EFFECTIVE AUGUST 1, 1988

(Effective August 1, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of Iron Age editors and correspondents based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 121.00 to	$ 122.00
No. 2 hvy. melting	111.00 to	112.00
No. 1 dealer bundles	161.00 to	162.00
No. 1 factory bundles (auto)	161.00 to	162.00
No. 2 bundles	69.00 to	70.00
No. 1 busheling	159.00 to	160.00
Machine shop turnings	44.00 to	45.00
Shoveling turnings	84.00 to	85.00
Cast iron borings	83.00 to	84.00
Low phos. punchings plate	164.00 to	165.00
Heavy turnings	111.00 to	112.00
No. 1 RR hvy. melting	151.00 to	152.00
Rails, 2 ft. and under	173.00 to	174.00
Scrap rails, random lgth	150.00 to	151.00
RR specialties	162.00 to	163.00
No. 1 machinery cast	98.00 to	99.00
Cupola cast	90.00 to	91.00
Heavy breakable cast	40.00 to	41.00
Stainless		
18-8 bundles and solids	1,340.00 to	1,350.00
18-8 turnings	1,240.00 to	1,250.00

Chicago

No. 1 hvy. melting	$ 119.00 to	$ 120.00
No. 2 hvy. melting	116.00 to	117.00
No. 1 dealer bundles	154.00 to	155.00
No. 1 factory bundles	152.00 to	153.00
No. 2 dealer bundles	93.00 to	94.00
No. 1 busheling	145.00 to	146.00
Shredder scrap	142.00 to	143.00
Machine shop turnings	56.00 to	57.00
Mixed borings and turnings	48.00 to	49.00
Shoveling turnings	75.00 to	76.00
Cast iron borings	77.00 to	78.00
Low phos. forge crop	167.00 to	168.00
Low phos. punchings plate 1/4 in. and heavier	183.00 to	184.00
Low phos. 2 ft. and under	176.00 to	177.00
No. 1 RR hvy. melting	134.00 to	135.00
Scrap rails random lgth	156.00 to	157.00
Reroller rails	172.00 to	173.00
Rails, 2 ft. and under	179.00 to	180.00
RR couplers and knuckles	133.00 to	134.00
RR car axles	189.00 to	190.00
No. 1 machinery cast	134.00 to	135.00
Cupola cast	119.00 to	120.00
Stove plate	135.00 to	136.00
Steel car wheels	159.00 to	160.00
Stainless		
18-8 bundles and solids	1,300.00 to	1,310.00
18-8 turnings	1,190.00 to	1,200.00
430 bundles and solids	270.00 to	280.00
430 turnings	185.00 to	195.00

Philadelphia

No. 1 hvy. melting	$ 107.00 to	$ 110.00
No. 2 hvy. melting	97.00 to	100.00
No. 1 dealer bundles	147.00 to	150.00
No. 2 dealer bundles	77.00 to	80.00
No. 1 busheling	147.00 to	150.00
Shredder scrap	142.00 to	145.00
Machine shop turnings	32.00 to	35.00
Mixed borings and turnings	32.00 to	35.00
Shoveling turnings	53.00 to	56.00
Low phos. 5 ft. and under	137.00 to	140.00
Low phos. 2 ft. punchings	147.00 to	150.00
Electric furnace bundles	153.00 to	156.00
RR specialties	137.00 to	140.00
Rails, 2 ft. and under	150.00 to	153.00
Cupola cast	104.00 to	107.00
Heavy breakable cast	62.00 to	65.00
No. 1 machinery cast	114.00 to	117.00

Detroit

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 87.00 to	$ 88.00
No. 2 hvy. melting	85.00 to	86.00
No. 1 dealer bundles	142.00 to	143.00
No. 2 bundles	76.00 to	77.00
No. 1 busheling	140.00 to	141.00
Drop forge flashings	85.00 to	86.00
Machine shop turnings	63.00 to	64.00
Mixed borings and turnings	30.00 to	31.00
Shoveling turnings	63.00 to	64.00
Cast iron borings	55.00 to	56.00
Heavy breakable cast	53.00 to	54.00
Mixed cupola cast	70.00 to	71.00
Automobile cast	92.00 to	93.00
Stainless		
18-8 bundles and solids	1,160.00 to	1,170.00
18-8 turnings	760.00 to	770.00
430 bundles and solids	220.00 to	230.00

Youngstown

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 104.00 to	$ 105.00
No. 2 hvy. melting	95.00 to	96.00
No. 1 dealer bundles	146.00 to	147.00
No. 2 dealer bundles	56.00 to	57.00
Machine shop turnings	55.00 to	56.00
Shoveling turnings	55.00 to	56.00
Low phos. plate	132.00 to	133.00
Electric furnace bundles	149.00 to	150.00
Galvanized bundles	147.00 to	148.00

Cleveland

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	88.00 to	89.00
No. 1 dealer bundles	146.00 to	147.00
No. 1 factory bundles	136.00 to	137.00
No. 2 bundles	55.00 to	56.00
No. 1 busheling	142.00 to	143.00
Machine shop turnings	58.00 to	59.00
Shoveling turnings	58.00 to	59.00
Cast iron borings	55.00 to	56.00
Cut structural & plates 5 ft. and under	128.00 to	129.00
Cut structural & plates 2 ft. and under	155.00 to	156.00
Low phos. punchings plate	161.00 to	162.00
Foundry steel, 2 ft. & under	92.00 to	93.00
No. 1 RR hvy. melting	110.00 to	111.00
Rails, 3 ft. and under	165.00 to	166.00
Rails, 18 in. and under	169.00 to	170.00
No. 1 machinery cast	91.00 to	92.00
Mixed cast	56.00 to	57.00
Stainless		
18-8 bundles	1,165.00 to	1,175.00
18-8 turnings	765.00 to	775.00
430 bundles	225.00 to	235.00

Buffalo

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 96.00 to	$ 97.00
No. 2 hvy. melting	87.00 to	88.00
No. 1 busheling	134.00 to	135.00
No. 1 dealer bundles	134.00 to	135.00
No. 2 bundles	50.00 to	51.00
Machine shop turnings	35.00 to	36.00
Mixed borings and turnings	35.00 to	36.00
Shoveling turnings	39.00 to	40.00
Cast iron borings	44.00 to	45.00
Low phos. plate	126.00 to	127.00
Structural and plate 2 ft. and under	144.00 to	145.00
Rails, 2 ft. and under	141.00 to	142.00
Scrap rails, random lgth	119.00 to	120.00
No. 1 machinery cast	114.00 to	115.00
No. 1 cupola cast	94.00 to	95.00

St. Louis

No. 1 hvy. melting	$ 105.00 to	$ 106.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 busheling	146.00 to	147.00
No. 1 dealer bundles	148.00 to	149.00
No. 2 bundles	85.00 to	86.00
Machine shop turnings	49.00 to	50.00
Shoveling turnings	53.00 to	54.00
Cast iron borings	67.00 to	68.00
No. 1 RR hvy. melting	135.00 to	136.00
Rails, random length	131.00 to	132.00
Rails, 5 ft. and under	143.00 to	144.00
Plate and structural, 5 ft. and under	135.00 to	136.00
Cupola cast	91.00 to	92.00
Heavy breakable cast	43.00 to	44.00
Stove plate	127.00 to	128.00
Steel car wheels	132.00 to	133.00
Rerolling rails	140.00 to	141.00
Unstripped motor blocks	72.00 to	73.00

Birmingham

No. 1 hvy. melting	$ 109.00 to	$ 110.00
No. 2 hvy. melting	105.00 to	106.00
No. 1 dealer bundles	119.00 to	120.00
No. 2 bundles	89.00 to	90.00
No. 1 busheling	119.00 to	120.00
Shredder scrap	134.00 to	135.00
Machine shop turnings	44.00 to	45.00
Shoveling turnings	59.00 to	60.00
Cast iron borings	36.00 to	37.00
Electric furnace bundles	99.00 to	100.00
Elec. furnace, 3 ft. & under	114.00 to	115.00
Structural and plate, 2 ft.	149.00 to	150.00
Structural and plate, 4 ft.	132.00 to	133.00
No. 1 RR hvy. melting	132.00 to	133.00
Scrap rails, random lgth	139.00 to	140.00
Rails, 2 ft. and under	164.00 to	165.00
Angles and splice bars	140.00 to	141.00
No. 1 cupola cast	110.00 to	111.00
Unstripped motor block	95.00 to	96.00

Cincinnati

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 97.00 to	$ 98.00
No. 2 hvy. melting	89.00 to	90.00
No. 1 dealer bundles	134.00 to	135.00
No. 2 bundles	61.00 to	62.00
No. 1 busheling	134.00 to	135.00
Machine shop turnings	44.00 to	45.00
Shoveling turnings	55.00 to	56.00
Cast iron borings	48.00 to	49.00
Low phos. 18 in. and under	143.00 to	144.00
Rails, random length	110.00 to	111.00
Rails, 2 ft. and under	143.00 to	144.00
No. 1 cupola cast	92.00 to	93.00
Heavy breakable cast	54.00 to	55.00
Drop broken cast	98.00 to	99.00

New York

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 73.00 to	$ 75.00
No. 2 hvy. melting	65.00 to	66.00
No. 2 dealer bundles	35.00 to	37.00
Mixed borings and turnings	10.00 to	11.00
Shoveling turnings	10.00 to	12.00
Clean cast, chem. borings	38.00 to	39.00
No. 1 machinery cast	81.00 to	82.00
Mixed yard cast	54.00 to	55.00
Heavy breakable cast	18.00 to	20.00
Stainless		
18-8 prepared solids	960.00 to	980.00
18-8 turnings	620.00 to	640.00
430 prepared solids	300.00 to	320.00
430 solids	305.00 to	325.00

Boston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 73.00 to	$ 75.00
No. 2 hvy. melting	63.00 to	65.00
No. 1 dealer bundles	118.00 to	120.00
No. 2 bundles	33.00 to	35.00
No. 1 busheling	115.00 to	117.00
Shredder scrap	83.00 to	85.00
Machine shop turnings	20.00 to	22.00
Shoveling turnings	25.00 to	27.00
No. 1 machinery cast	85.00 to	87.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	22.00 to	24.00

San Francisco

No. 1 hvy. melting	$ 69.00 to	$ 71.00
No. 2 hvy. melting	63.00 to	65.00
No. 1 dealer bundles	61.00 to	63.00
No. 2 dealer bundles	47.00 to	49.00
Machine shop turnings	18.00 to	19.00
Cast iron borings	18.00 to	19.00
No. 1 cupola cast	89.00 to	91.00

Los Angeles

No. 1 hvy. melting	$ 77.00 to	$ 79.00
No. 2 hvy. melting	71.00 to	73.00
No. 1 dealer bundles	69.00 to	71.00
No. 2 dealer bundles	50.00 to	52.00
Machine shop turnings	19.00 to	21.00
Shoveling turnings	20.00 to	21.00
Cast iron borings	20.00 to	21.00
Elec. furnace, 1 ft. and under (foundry)	80.00 to	82.00
No. 1 cupola cast	84.00 to	86.00

Seattle

No. 1 hvy. melting	$ 94.00 to	$ 95.00
No. 2 hvy. melting	84.00 to	85.00
No. 2 bundles	69.00 to	70.00
No. 1 cupola cast	104.00 to	105.00
Mixed yard cast	85.00 to	87.00

Hamilton, Ont.

Brokers buying prices per net ton on cars

No. 1 hvy. melting	$ 110.00
No. 2 hvy. melting, cut 2 ft. and under	97.00
No. 1 dealer bundles	131.00
No. 2 bundles	81.00
Mixed steel scrap	73.00
Bush. new fact. prep'd	128.00
Bush. new fact. unprep'd	104.00
Machine shop turnings	39.00
Short steel turnings	39.00
Mixed borings and turning	26.00
Cast scrap	97.00

Houston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 112.00 to	$ 113.00
No. 2 hvy. melting	103.00 to	104.00
No. 2 bundles	54.00 to	55.00
Machine shop turnings	47.00 to	48.00
Crushed turnings	57.00 to	58.00
Shredder scrap	114.00 to	115.00
Cut structural plate, 2 ft. and under	129.00 to	130.00
Cut structural plate, 5 ft. and under	120.00 to	121.00
Unstripped motor blocks	65.00 to	66.00
Cupola cast	95.00 to	96.00

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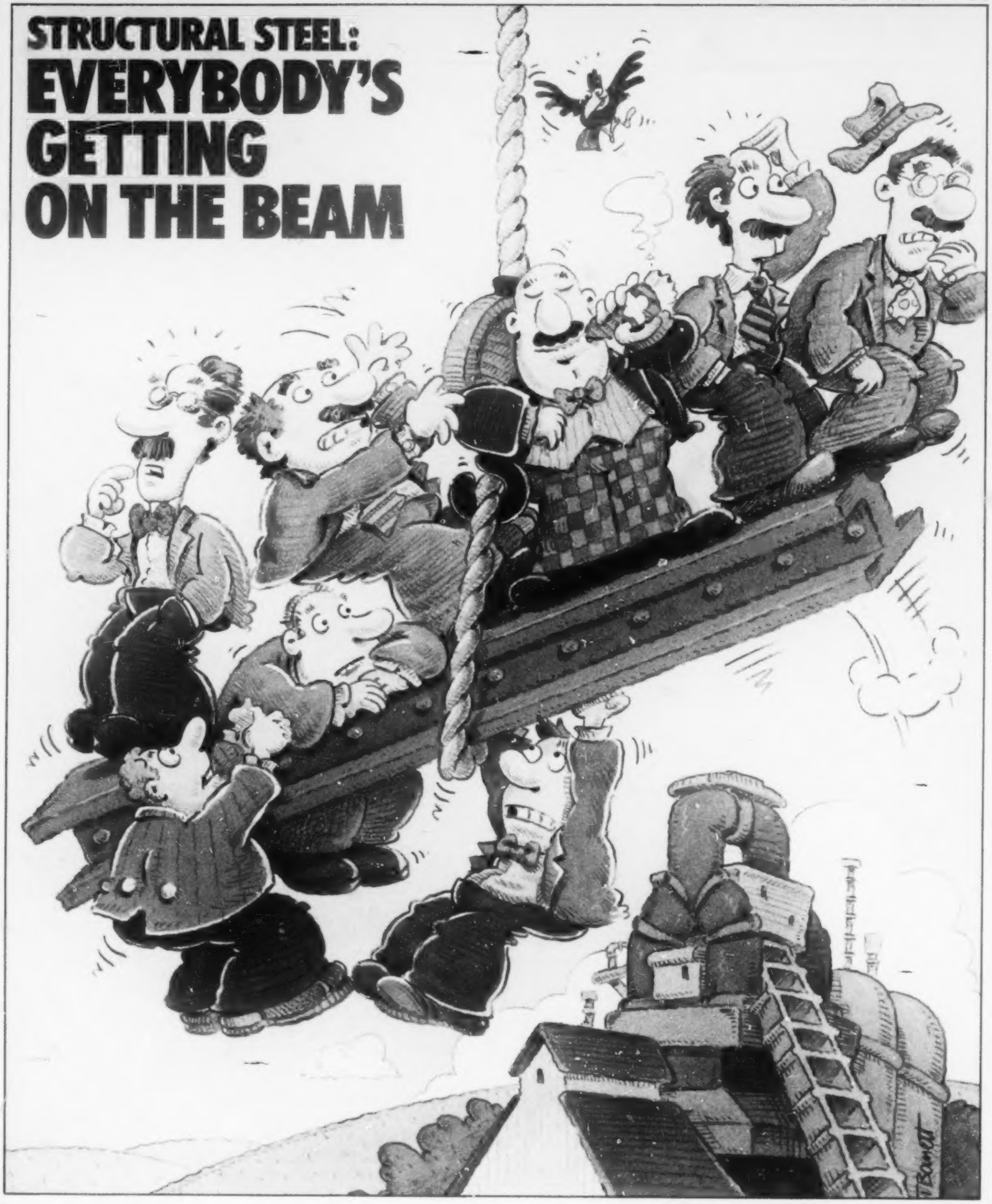
IRON AGE

THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

A Fairchild Business Publication

OCTOBER 1988

STRUCTURAL STEEL: EVERYBODY'S GETTING ON THE BEAM



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MATERIALS PRICES

PRICE & PRODUCTION DATA

(Effective September 6, 1988)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	259	261	271	204
Pittsburgh	203	192	197	188
Youngstown	96	96	123	115
Lake Erie	151	148	169	145
Detroit	167	156	157	142
Chicago	531	496	531	496
Midwest	206	204	195	200
Southern	214	208	224	192
Western	91	90	98	54
U.S. Production	1,918	1,851	1,965	1,736

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 37.344*
Pellets (per iron unit natural)	gross-ton 46.84-59.4**
Pellets (per iron unit natural)	gross-ton 72.45-86.9***
Mesabi, regular-unscreened	gross-ton 32.53
Mesabi, non-bessemer	gross-ton 30.03-31.53

*37.344¢—U.S. Steel, 5/20/87, FOB Mount Iron, Minn. **46.84¢—Inland Steel Mining, 1/1/87; 58.0¢—Mineral Services, 8/13/85; 59.4¢—Pickands Mather, 8/1/85, delivered hold of vessel, upper Lake ports. ***72.45¢—Cleveland Cliffs, 12/30/86; Oglebay Norton, 3/1/87; 86.9¢—Hanna Mining, 2/26/82

STEEL PRODUCTION, COMPOSITE PRICES

(Effective September 6, 1988)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1988	To Date 1987
Net tons, in thousands	1,918	1,851	67,723	57,137
Capability Utilization Rate	89.9	86.8	89.6	75.7

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 8/1/88)	24.594	24.594	24.594	24.804
Pig Iron** (Net ton= 2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$112.17	$112.33	$116.50	$ 92.83
No. 2 bundles	$ 76.83	$ 78.83	$ 80.50	$ 58.83

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh	$117.50	$121.50	$121.50	$ 96.50
No. 1 steel, Philadelphia	104.50	104.50	108.50	84.50
No. 1 steel, Chicago	114.50	112.50	119.50	97.50
No. 1 bundles, Detroit	132.50	142.50	142.50	105.50
Low Phos., Youngstown	136.50	141.50	132.50	100.50
No. 1 mach'y cast., Pgh	98.50	98.50	98.50	92.50
No. 1 mach'y cast., Phila	113.50	113.50	115.50	93.50
No. 1 mach'y cast., Chi	134.50	134.50	134.50	108.50

*Finished Steel Composite: Weighted index of steel bars, structurals, plates, rails, hot rolled and cold rolled sheets.

**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective September 6, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	110.00	121.00	9/6/88
Copper (C)	108.00	106.00	8/31/88
Lead	38.00	36.00	8/31/88
Magnesium Ingot	153.00	148.00	12/9/85
Nickel (LME)	581.00	612.00	9/6/88
Zinc	69.00	66.00	8/30/88

ALUMINUM: Avg. for last week & previous week. COPPER: (C)=cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$260.00
Beryllium-copper strip No. 25, per lb.Be	$8.00
Beryllium powder SP200F, per lb.	$244.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz.	$428.45
Indium, per troy oz.	$9.75
Iridium, per troy oz.	$305.00
Magnesium sticks, 10,000 lbs.	$2.12
Mercury, per 76-lb., f.o.b. N.Y.	$348.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz.	$123.00
Platinum, per troy oz.	$528.00
Rhodium, per troy oz.	$1,200.00
Silver ingots, per troy oz.	$6.54
Titanium sponge, melt grade	$4.00
Tungsten powder, hyd red	$9.53-9.85
Vanadium	$6.00
Zirconium sponge	$11.20-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

Aug. 29—333.00
Aug. 30—335.00
Aug. 31—335.00
Sept. 1—338.00
Sept. 2—343.00

Scrap Prices

Brass Mill Scrap

(Cents per lb.; over 20,000 lbs. add 1¢ per lb.)

	Solids	Turnings
Copper	84	82
Yellow brass	73	72
Red brass	66½	62½
Comm. bronze	68½	63½
Mang. bronze	48½	47½
Free cutting rod ends	63½	62½

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	54
No. 2 copper wire	73
Light copper	68

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	76
No. 2 copper wire	67
Light copper	60
No. 1 composition	59
No. 1 comp. turnings	59
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	37
Radiators	37

Aluminum	—
New mixed clips	66 — 67
Old sheet	54 — 55
Old cast	56 — 57
Clean dry borings	45 — 46

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	57 — 58
Mixed L.C. clips	56 — 57
Old sheets and cast	47 — 48
Borings and turnings	39 — 40
Duraluminum clippings	48 — 49

Copper and Brass

No. 1 copper wire	70 — 72
No. 2 copper wire	60 — 61
Light copper	54 — 55
Radiators	37 — 38
No. 1 composition	58 — 59
No. 1 composition turnings	54 — 55
Cocks and faucets	47 — 48
Clean heavy yellow brass	42 — 43
Brass pipe	52 — 53
New soft brass clippings	64 — 65

Lead

Heavy soft lead	14 — 15
Whole batteries	2 — 3
Type metal	23 — 24
Electrotype	14 — 15

Nickel

Nickel solids	450 —460
Nickel rod ends	443 —453
Nickel sheets, clips	433 —443
Nickel turnings	259 —279

Zinc

New zinc clippings	20 — 21
Old diecast zinc	16 — 17

MATERIALS PRICES

EFFECTIVE SEPTEMBER 6, 1988

(Effective September 6, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of Iron Age editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 117.00 to	$ 118.00
No. 2 hvy. melting	107.00 to	108.00
No. 1 dealer bundles	149.00 to	150.00
No. 1 factory bundles (auto)	149.00 to	150.00
No. 2 bundles	69.00 to	70.00
No. 1 busheling	151.00 to	152.00
Machine shop turnings	44.00 to	45.00
Shoveling turnings	79.00 to	80.00
Cast iron borings	78.00 to	79.00
Low phos. punchings plate	159.00 to	160.00
Heavy turnings	107.00 to	108.00
No. 1 RR hvy. melting	149.00 to	150.00
Rails, 2 ft. and under	170.00 to	171.00
Scrap rails, random lgth.	147.00 to	148.00
RR specialties	161.00 to	162.00
No. 1 machinery cast	98.00 to	99.00
Cupola cast	90.00 to	91.00
Heavy breakable cast	40.00 to	41.00
Stainless		
18-8 bundles and solids	1,340.00 to	1,350.00
18-8 turnings	1,240.00 to	1,250.00

Chicago

No. 1 hvy. melting	$ 114.00 to	$ 115.00
No. 2 hvy. melting	111.00 to	112.00
No. 1 dealer bundles	144.00 to	145.00
No. 1 factory bundles	141.00 to	142.00
No. 2 dealer bundles	87.00 to	88.00
No. 1 busheling	141.00 to	142.00
Shredder scrap	132.00 to	133.00
Machine shop turnings	56.00 to	57.00
Mixed borings and turnings	48.00 to	49.00
Shoveling turnings	75.00 to	76.00
Cast iron borings	77.00 to	78.00
Low phos. forge crop	161.00 to	162.00
Low phos. punchings plate 1/4 in. and heavier	177.00 to	178.00
Low phos. 2 ft. and under	170.00 to	171.00
No. 1 RR hvy. melting	129.00 to	130.00
Scrap rails random lgth.	156.00 to	157.00
Reroller rails	169.00 to	170.00
Rails, 2 ft. and under	179.00 to	180.00
RR couplers and knuckles	133.00 to	134.00
RR car axles	189.00 to	190.00
No. 1 machinery cast	134.00 to	135.00
Cupola cast	119.00 to	120.00
Stove plate	135.00 to	136.00
Steel car wheels	159.00 to	160.00
Stainless		
18-8 bundles and solids	1,250.00 to	1,260.00
18-8 turnings	1,140.00 to	1,150.00
430 bundles and solids	270.00 to	280.00
430 turnings	185.00 to	195.00

Philadelphia

No. 1 hvy. melting	$ 103.00 to	$ 106.00
No. 2 hvy. melting	93.00 to	96.00
No. 1 dealer bundles	137.00 to	140.00
No. 2 dealer bundles	72.00 to	75.00
No. 1 busheling	134.00 to	137.00
Shredder scrap	138.00 to	141.00
Machine shop turnings	32.00 to	35.00
Mixed borings and turnings	32.00 to	35.00
Shoveling turnings	53.00 to	56.00
Low phos. 5 ft. and under	128.00 to	131.00
Low phos. 2 ft. punchings	145.00 to	148.00
Electric furnace bundles	143.00 to	146.00
RR specialties	137.00 to	140.00
Rails, 2 ft. and under	150.00 to	153.00
Cupola cast	104.00 to	107.00
Heavy breakable cast	62.00 to	65.00
No. 1 machinery cast	112.00 to	115.00

Detroit

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 83.00 to	$ 84.00
No. 2 hvy. melting	81.00 to	82.00
No. 1 dealer bundles	132.00 to	133.00
No. 2 bundles	72.00 to	73.00
No. 1 busheling	130.00 to	131.00
Drop forge flashings	74.00 to	79.00
Machine shop turnings	63.00 to	64.00
Mixed borings and turnings	30.00 to	31.00
Shoveling turnings	63.00 to	64.00
Cast iron borings	63.00 to	64.00
Heavy breakable cast	51.00 to	52.00
Mixed cupola cast	68.00 to	69.00
Automobile cast	90.00 to	91.00
Stainless		
18-8 bundles and solids	1,125.00 to	1,135.00
18-8 turnings	700.00 to	710.00
430 bundles and solids	220.00 to	230.00

Youngstown

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 103.00 to	$ 104.00
No. 2 hvy. melting	95.00 to	96.00
No. 1 dealer bundles	136.00 to	137.00
No. 2 dealer bundles	56.00 to	57.00
Machine shop turnings	60.00 to	61.00
Shoveling turnings	60.00 to	61.00
Low phos. plate	136.00 to	137.00
Electric furnace bundles	140.00 to	141.00
Galvanized bundles	138.00 to	139.00

Cleveland

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 97.00 to	$ 98.00
No. 2 hvy. melting	88.00 to	89.00
No. 1 dealer bundles	136.00 to	137.00
No. 1 factory bundles	133.00 to	134.00
No. 2 bundles	55.00 to	56.00
No. 1 busheling	134.00 to	135.00
Machine shop turnings	63.00 to	64.00
Shoveling turnings	63.00 to	64.00
Cast iron borings	55.00 to	56.00
Cut structural & plates 5 ft. and under	124.00 to	124.00
Cut structural & plates 2 ft. and under	150.00 to	151.00
Low phos. punchings plate	156.00 to	157.00
Foundry steel, 2 ft. & under	90.00 to	91.00
No. 1 RR hvy. melting	124.00 to	125.00
Rails, 2 ft. and under	136.00 to	137.00
Rails, 18 in. and under	160.00 to	161.00
No. 1 machinery cast	88.00 to	89.00
Mixed cast	69.00 to	70.00
Stainless		
18-8 bundles	1,130.00 to	1,140.00
18-8 turnings	705.00 to	715.00
430 bundles	225.00 to	235.00

Buffalo

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 94.00 to	$ 95.00
No. 2 hvy. melting	85.00 to	86.00
No. 1 busheling	124.00 to	125.00
No. 1 dealer bundles	124.00 to	125.00
No. 2 bundles	50.00 to	51.00
Machine shop turnings	45.00 to	46.00
Mixed borings and turnings	45.00 to	46.00
Shoveling turnings	54.00 to	55.00
Cast iron borings	49.00 to	50.00
Low phos. plate	121.00 to	122.00
Structural and plate 2 ft. and under	139.00 to	140.00
Rails, 2 ft. and under	141.00 to	142.00
Scrap rails, random lgth.	119.00 to	120.00
No. 1 machinery cast	110.00 to	111.00
No. 1 cupola cast	94.00 to	95.00

St. Louis

No. 1 hvy. melting	$ 95.00 to	$ 96.00
No. 2 hvy. melting	78.00 to	79.00
No. 1 busheling	137.00 to	138.00
No. 1 dealer bundles	138.00 to	139.00
No. 2 bundles	75.00 to	76.00
Machine shop turnings	47.00 to	48.00
Shoveling turnings	51.00 to	52.00
Cast iron borings	64.00 to	65.00
No. 1 RR hvy. melting	125.00 to	126.00
Rails, random length	131.00 to	132.00
Rails, 5 ft. and under	133.00 to	134.00
Plate and structural, 5 ft. and under	125.00 to	126.00
Cupola cast	91.00 to	92.00
Heavy breakable cast	43.00 to	44.00
Stove plate	127.00 to	128.00
Steel car wheels	125.00 to	126.00
Rerolling rails	140.00 to	141.00
Unstripped motor blocks	72.00 to	73.00

Birmingham

No. 1 hvy. melting	$ 109.00 to	$ 110.00
No. 2 hvy. melting	105.00 to	106.00
No. 1 dealer bundles	119.00 to	120.00
No. 2 bundles	94.00 to	95.00
No. 1 busheling	119.00 to	120.00
Shredder scrap	134.00 to	135.00
Machine shop turnings	44.00 to	45.00
Shoveling turnings	59.00 to	60.00
Cast iron borings	36.00 to	37.00
Electric furnace bundles	99.00 to	100.00
Elec. furnace, 3 ft. & under	114.00 to	115.00
Structural and plate, 2 ft.	144.00 to	145.00
Structural and plate, 4 ft.	137.00 to	138.00
No. 1 RR hvy. melting	137.00 to	138.00
Scrap rails, random lgth.	139.00 to	140.00
Rails, 2 ft. and under	157.00 to	158.00
Angles and splice bars	140.00 to	141.00
No. 1 cupola cast	114.00 to	115.00
Unstripped motor blocks	95.00 to	96.00

Cincinnati

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 97.00 to	$ 98.00
No. 2 hvy. melting	89.00 to	90.00
No. 1 dealer bundles	134.00 to	135.00
No. 2 bundles	61.00 to	62.00
No. 1 busheling	134.00 to	135.00
Machine shop turnings	44.00 to	45.00
Shoveling turnings	55.00 to	56.00
Cast iron borings	48.00 to	49.00
Low phos. 18 in. and under	143.00 to	144.00
Rails, random length	110.00 to	111.00
Rails, 2 ft. and under	143.00 to	144.00
No. 1 cupola cast	92.00 to	93.00
Heavy breakable cast	54.00 to	55.00
Drop broken cast	98.00 to	99.00

New York

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 74.00 to	$ 76.00
No. 2 hvy. melting	66.00 to	67.00
No. 2 dealer bundles	35.00 to	37.00
Mixed borings and turnings	10.00 to	11.00
Shoveling turnings	10.00 to	12.00
Clean cast. chem. borings	38.00 to	39.00
No. 1 machinery cast	81.00 to	82.00
Mixed yard cast	54.00 to	55.00
Heavy breakable cast	18.00 to	20.00
Stainless		
18-8 prepared solids	950.00 to	960.00
18-8 turnings	610.00 to	630.00
430 prepared solids	300.00 to	310.00
430 solids	315.00 to	335.00

Boston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 73.00 to	$ 75.00
No. 2 hvy. melting	63.00 to	65.00
No. 1 dealer bundles	118.00 to	120.00
No. 2 bundles	33.00 to	35.00
No. 1 busheling	115.00 to	117.00
Shredder scrap	83.00 to	85.00
Machine shop turnings	30.00 to	32.00
Shoveling turnings	35.00 to	37.00
No. 1 machinery cast	85.00 to	87.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	22.00 to	24.00

San Francisco

No. 1 hvy. melting	$ 64.00 to	$ 66.00
No. 2 hvy. melting	58.00 to	60.00
No. 1 dealer bundles	56.00 to	58.00
No. 2 dealer bundles	42.00 to	44.00
Machine shop turnings	16.00 to	17.00
Cast iron borings	16.00 to	17.00
No. 1 cupola cast	89.00 to	91.00

Los Angeles

No. 1 hvy. melting	$ 69.00 to	$ 71.00
No. 2 hvy. melting	63.00 to	65.00
No. 1 dealer bundles	61.00 to	63.00
No. 2 dealer bundles	46.00 to	48.00
Machine shop turnings	18.00 to	19.00
Shoveling turnings	19.00 to	20.00
Cast iron borings	19.00 to	20.00
Elec. furnace, 1 ft. and under (foundry)	80.00 to	82.00
No. 1 cupola cast	84.00 to	86.00

Seattle

No. 1 hvy. melting	$ 89.00 to	$ 90.00
No. 2 hvy. melting	79.00 to	80.00
No. 2 bundles	64.00 to	65.00
No. 1 cupola cast	99.00 to	100.00
Mixed yard cast	80.00 to	82.00

Hamilton, Ont.

Brokers buying prices per net ton on cars

No. 1 hvy. melting	$ 110.00
No. 2 hvy. melting, cut 2 ft. and under	94.00
No. 1 dealer bundles	126.00
No. 2 bundles	79.00
Mixed steel scrap	70.00
Bush. new fact. prep'd	126.00
Bush. new fact. unprep'd	100.00
Machine shop turnings	39.00
Short steel turnings	39.00
Mixed borings and turning	26.00
Cast scrap	97.00

Houston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 112.00 to	$ 113.00
No. 2 hvy. melting	103.00 to	104.00
No. 2 bundles	54.00 to	55.00
Machine shop turnings	47.00 to	48.00
Crushed turnings	57.00 to	58.00
Shredder scrap	121.00 to	122.00
Cut structural plate, 2 ft. and under	129.00 to	130.00
Cut structural plate, 5 ft. and under	117.00 to	118.00
Unstripped motor blocks	65.00 to	66.00
Cupola cast	95.00 to	96.00